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ABSTRACT

This paper presents a conceptual analysis of the nature of teaching and similar practices (including law, psychiatry, and social work), and examines how these differ from other practices. Chapter I defines practice; discusses common elements of practices (such as skills, knowledge and outputs); and describes teaching as an indeterminate practice whose outputs cannot be distinctly specified, and whose materials are human beings. Chapter II investigates the nature of uncertainty and commitment in indeterminate practices; explores how skills and knowledge are adapted to deal with uncertainty; and examines procedures that lead to apparently competent performance, given uncertainty about skills and outputs in indeterminate practices. Chapter III analyzes the nature of competence in practice, and suggests that the usual concept of competence may need to be altered for indeterminate practices, where (1) competence often results from not knowing exactly what produces competent performance; and (2) commitment of the materials of practice (such as students) may be a more important component of competence than practitioners' skills and knowledge. Finally, chapter IV explores the social features of practice; identifies areas where competence may need to be adapted to the social character of practice; and considers the importance and implications of viewing competence in social, rather than technical, terms. (Author/MJL)

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TEACHING PRACTICE*

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I. WHAT IS PRACTICE?

I wish to discuss teaching practice, and other practices similar to teaching. I particularly wish to explore the character of these similar practices, and contrast them to other practices which are in some crucial respects different. These comparisons will help to identify the distinctive aspects of teaching and similar practices. Having done that, I then will be able to explore the implications of these distinctive aspects. What impact do they have on work in these practices? On the skills and knowledge required? And what do these distinctive features imply for our understanding of practice, or the way we train people to become practitioners?

Simply listing these queries brings to mind certain problems. Some concern the meaning of words, or concepts. Exactly what is meant by "practice?" Does it include only what we commonly term practices, like medicine or law? Or does it also include carpentry, or bricklaying, or perhaps hunting? Whatever the answer, it will imply some boundaries around the idea "practice," and this is at least de facto a definition. Some self-conscious attention to this definition seems appropriate at the outset.

Another set of questions concerns the comparisons I wish to make. In order to liken teaching to some practices and contrast it with others, I need to know what a similarity is, and what constitutes a difference. Do I believe teaching resembles police work more closely than pottery? Whatever the answer, it needs a foundation. This requires some clarification of my perspective on the inquiry. For if teaching and social work look very much like police work from some angles, from others they more closely resemble pottery. What points of comparison do I wish to stress? Since these comparisons will shape the entire inquiry, it would be wise to be explicit about them at the beginning.

Finally, I wish to explore knowledge and action in practices. But how? Shall I limit questions about practitioners' knowledge to what they know they know -- such as knowledge of reading and math, or the theory of psychoanalysis, or the welfare state, or criminal behavior? Or shall I extend it to their knowledge that discipline is essential, that criminals should be shot, or that welfare mothers deserve an extra break? Should my definition extend even further, to include "knowledge" that practitioners often seem unaware of, such as the knowledge that in reading one example will work for Johnnie and another for Jane? And what of the action of practices? Teachers have to teach, but they don't have to recruit their students. The state recruits students. But most therapists don't have the state's help in recruiting their patients. Is the state's intervention in teaching, or the role of markets in psychotherapy, an important element in the action of practices? Or is the only action of interest that of practitioners? Should the action of a practice be limited to what practitioners know and do, or should it include such other things as the organization of their work? These too are important questions, some of which are worth exploring at the outset.

The first chapter will be devoted largely to questions such as these, so as to lay out the basis on which I wish to compare and contrast practices. I begin by setting out my view of the essential respects in which all practices are similar, and then pass on to certain important respects in which they differ. These points of difference are critical to my later argument, for they comprise what I believe to be the important unique aspects of teaching and related practices. Thus, after a brief discussion of these differences, I turn to a more extended discussion of these unique aspects of teaching and similar practices.

I.A. SOME COMMON ELEMENTS OF PRACTICES

If we wish to know what a practice is -- and therefore what activities are not practices -- the conventions of ordinary language yield one answer. Medicine is a practice, as are teaching and law, but carpentry and police work are not. For while we commonly say that "Dr. Thing is engaged in the practice of medicine," or that "George practices law," we never say that "Mr. Smiley practices police work." In general this linguistic convention follows a rough distinction between professions and nearly every other sort of work. Nurses "practice" their trade, but butchers just work. Preachers and perhaps some other professions are left in limbo by this convention, while magic and hypnotism are oddly lumped with law and medicine.

These bedfellows may seem suitable to some, but some serious objections can be raised. For if we explore medicine and carpentry some similarities appear which the conventional categories would obscure. It is true, for example, that doctors and carpenters know about different matters -- doctors know how to saw bones, while carpenters know how to saw planks -- but in certain respects both doctors and carpenters need the same sorts of knowledge. Both trades require ordinary knowledge relevant to their work: doctors must know that the heart pumps blood, and carpenters must know that wood warps and stretches. This is not specialized knowledge, but it is required for the practices in question. And each trade also requires specialized knowledge: doctors must know that the pancreas produces insulin, just as carpenters must know that pine boards yield very different floors than oak boards. Both practices, then, require what some call propositional knowledge -- "knowledge that." And just as both trades require ordinary and specialized knowledge of this sort, both also require know-how.

Doctors and carpenters require some ordinary know-how -- like how to use a ruler, or a scale. They also have quite specialized sorts of know-how. Doctors often need to know how to sew up a heart, or how to repair an ulcerated stomach; carpenters often must know how to set up a roof rafter so that it is true, or how to frame windows for a house. This knowledge how seems to be different in some respects from knowledge that, but knowledge how is found in all practices.

These two sorts of knowledge, knowledge that and knowledge how, appear to be common to many sorts of work. One might reasonably ask, then, if both carpentry and coronary surgery have these two sorts of knowledge in common, why call one a practice and the other not? The mere fact that doctors know something different than carpenters seems an odd ground for the distinction. After all, doctors know very different things than lawyers, but we call both those practices. Doctors probably know a great deal more about many matters than nurses, yet both of those are called practices. Do nurses know more than carpenters, or preachers? If no convincing case could be made, why limit the term practice to nurses? It would seem perverse.

On this account, however, every human activity would be a practice. The three day old infant knows how to suckle at the teat, and knows as well that squalling will bring a mother. Do I mean to suggest the existence of the practice of nursing? The kitchen-maid knows how to eat a turnip, and knows as well that turnips are a vegetable: is there thus a practice of turnip-eating? Thus, know-how and knowledge that seem to be common to all or nearly all human activity. Can any activity be thus termed a practice?

It would of course be possible to do so, but I choose not to. For carpentry and coronary surgery have in common at least one other attribute which nursing and turnip-eating do not. The first two are not only learned but must in some significant degree be learned again and again after being first mastered, by being adapted to deal with new materials, conditions, and requirements. But turnip-eating and nursing are learned pretty much once and for all. Once learned, they can be done very nearly or entirely by rote, or habit. There is perhaps a bit of a continuum here between activities and practices, the gradation being defined by the degree to which re-learning or adaptation is required. For some very modest degree of adaptation may be required even in habits. One must clip some cigars before smoking and not others, or clip some in one way and others differently. But the extent of such adaptation is so slight, and the knowledge so rudimentary, as to leave a very great difference between smoking or turnip-eating on the one hand and carpentry, hunting, teaching, coronary surgery and plumbing on the other. Activities falling in the second group I will call practices because of this different sort of persistent adaptive learning. The others I will term simple activities. Skill and knowledge, then, while common to all or nearly all human activities, play a different role in what I term practices.

Habit and role performance of course also play a large role in practices, along with re-learned or adapted skills and knowledge. The carpenter must be able to hammer nails, much of the time with little more attention than one needs to light a cigar, and a good doctor must

take temperatures as easily as if he were doing it in his sleep. But in all these practices--cooking, carpentering and doctoring--such rote or habitual elements are integrated into performances marked by the adaptation of habit and other knowledge to novel conditions, materials and requirements. The doctor may take a temperature with little attention while also noticing the patient's skin color, breathing, and facial disposition; he may take another temperature equally mindlessly, all the hile stopping up major bleeding from a wound, taking a pulse and then recording blood pressure. Yet the nearly mindlessly-taken temperatures have quite different bearings in the two situations. For in the second the problem worrying the doctor may be shock, while in the first it is perhaps measles or chicken pox. The temperature-taking may have been habitual, but it was part of a performance in which the practitioner was attending mindfully to other things, and learning. Roughly the same point can be made about the difference between hammering nails in a finished floor and hammering them in rough siding, or between tasting drinking water and tasting a complex sauce. Habit is an important, indeed an essential, part of all practices, for the relative complexity of any practice requires that many elements of any performance be carried out with little conscious attention in order that conscious concentration can be focused on those novel elements that entail some adaptation of existing knowledge or skill.

There is, then, no contradiction between saying that a practice is marked by continuing (though hardly continuous) learning or innovation--

in distinction from simple activities, which are carried out habitually, or nearly entirely by rote--and also observing that habit is a regular and indeed essential element in any such practice. Gilbert Ryle made much the same point in distinguishing between what he termed habitual and intelligent practice. In habitual practices ". . . one performance is a replica of its predecessors." By contrast, in intelligent practices ". . . one performance is modified by its predecessors. The agent is still learning" (p. 43). Ryle offers a nice example to illuminate this distinction, and it is worth quoting in full.

> After the toddling age we walk on pavements without minding our steps. But a mountaineer walking over ice-covered rocks in a high wind in the dark does not move his limbs by blind habit; he thinks what he is doing, he is ready for emergencies, he economizes in effort, he makes tests and experiments; in short he walks with some degree of skill and judgment. If he makes a mistake he is inclined not to repeat it, and if he finds a new trick effective he is inclined to continue to use it and improve on it. He is concomitantly walking and teaching himself how to walk in conditions of this sort. (p. 43)

The mountaineer could hardly make his way over the icy rocks were he not able to walk quite competently, quite mindlessly, in ordinary circumstances.

A practice is thus distinguished from habitual activity because the skills and knowledge of practices are continually--though not in every performance--adapted to conditions, materials or requirements somewhat different from those which obtained in previous performances. This adaptation is somewhat conscious, but often there is no articulation of the innovation by the practitioner or others. The carpenter who hammers nails less strongly

in mahogany the first time he uses it, because he feels the softer quality of this wood than the oak with which he is familiar, may adapt equally well for not being able to articulate why.

This attribute of practices suggests another point -- to wit, that a practice does not require simply one or a few skills learned and re-learned, but a complex combination of skills. We can light and smoke a pipe nearly mindlessly precisely because the skills involved are sufficiently few and simple. We cannot build a cabinet equally mindlessly, though, because a complex combination of skills and knowledge is required for such a performance. When a performance is such as to require regular learning or adaptation, then, we can be sure that it entails a complex combination of skill and knowledge.

One other element appears to distinguish simple activities from practices. Practices have outputs. They may be objects, services, or ideas, but outputs are an essential element of practices. Practices, after all, are known and identified by their outputs. We know the difference between literature and literary criticism by looking at the output. Simple activities, by contrast, have no outputs. Eating is a simple activity, for example, as universal and often as unthinking as breathing or walking. Like all human activities it has results: a full stomach or satisfaction, or even survival. Cooking, by contrast, eventuates in outputs -- that is, in foods of various sorts which can be consumed. This cannot be said of mere eating. I prefer to reserve the term outputs for those results which can be consumed, used, or appreciated by others. Practices have such public results, but simple activities do not.

There are, of course, different sorts of outputs and different ways of viewing them. One may argue that the real output of practices is not pots or meals or ideas, but rather the satisfaction or utility these have for their consumers. Or perhaps the real output is price, which is a sign of utility. This is plausible in the sense that one distinguishing element of practices' output is that they are public, and can be used or appreciated by others. Thus outputs have utility and frequently prices. It is even true that some practitioners consciously seek to produce appreciation or satisfaction among the consumers of their practices, and many seek to earn money. But the utility or price of outputs is not of interest in my analysis, simply because they can be quite non-specific to practices. We have no regular way of distinguishing between the utility attaching to a fifth century Greek vase for Mr. Jones and that attaching to a twentieth century donut for Ms. White -- save their price. The outputs themselves, however, allow us to see the difference between Greek vase making and contemporary donut making. Price is not specific to outputs in this sense. For one thing, prices result from many complex ways in which any practice's outputs are situated in markets. Secondly, many outputs are unpriced. Parenting, for example, produces outputs which are unpriced, at least for the most part, as do many practices undertaken for recreational purposes. Most important, though, carpenters do not try to make prices, even though they seek to make money. They make cabinets, and the cabinet is the output of interest here. This is because we know their practice by this output, not by its price or utility to consumers. And in understanding a practice--my purpose here--we try to understand its output, and the role of such influences as skill, or knowledge, or price, in its production.

I.B. TYPES OF PRACTICES

Thus far I have attended only to a few aspects of practices. I have argued that in a practice one finds a complex combination of skills and knowledge, and that these skills and knowledge are continually adapted in performances. And I have argued that practices have outputs. In these few but fundamental respects teaching resembles cooking and carpentry, and differs from eating and walking. But if one aim of this chapter is to better understand what we mean by practice and how teaching resembles other practices, another aim is to understand how teaching differs from some practices and resembles others. For these purposes it will help to scrutinize the outputs of practices more closely.

I.B.1. OUTPUT DIFFERENCES AMONG PRACTICES

Perhaps the most fundamental and easily observable difference among practices concerns their outputs. For many practices the output is a material and inanimate object. Winemakers produce wine; silversmiths produce jewelry; cooks produce meals and electronics technicians produce computers, radios, or calculators. Practices which produce such outputs are crafts or technologies, or some mixture of the two. A second class of practices have as their output some state of human individuals or organizations. Psychiatrists seek to change the behavior of individuals by affecting their emotions. Policy officers seek to maintain order in a crowd, or to deter crime. Teachers aim to change the minds and behavior of their students, by teaching them how to read, think, sit up straight and love their country. Politicians often try to affect outputs like these just mentioned, by setting standards or appropriating monies, but they often seek to produce other outputs, such as peace, war, equality,

or full employment. Practitioners who produce states of individual or organizational life--peace, war, learning, and the like--work in what I call indeterminate practices. I call them indeterminate because the outputs are difficult to specify for production. More of that shortly.

Of course, politicians often cause objects to be produced--like bombs, or guns. These objects are produced by practitioners in other practices than politics, such as nuclear technology. Teachers as well use the output of others' practices, such as bulletin boards and paper notebooks. These objects are not the outputs of teaching, but the outputs of other practices which are used in teaching. All practices use outputs of other practices.

A third and final group of practices has intellectual and imaginative outputs. Physicists, for example, describe and explain sub-atomic particle behavior, and zoologists classify animate nature. Scientists, in sum, produce ideas about the non-human environment. And in history, literature, politics, economics, and painting, and their many sub-specialties like financial analysis or opinion research, ideas about man, society, their place in the universe and time, and their meaning are produced. Most of these ideas are expressed in words, many employ numbers, and a few practices express ideas in visual terms. The output in all, though, whether numerate, visual or verbal, is ideas. This is also true of practices which produce intellectual and imaginative plans: architecture, music composition, and dramatic writing. Initiates can understand and appreciate these plans in themselves, but even for initiates -- and certainly for the rest of us -- interpretative realizations of these plans

help to understand them.* There also are intellectual and imaginative outputs we can term appreciative, for they consist exclusively of commentary upon other practices. Literary and theatrical criticism are obvious examples, as is connoisseurship of wine. Some of these appreciative practices are concerned with other practices that produce objects (art criticism is an example, as is wine connoisseurship), while other appreciative practices attend to practices that produce ideas, or other imaginative constructs (philosophy is a member of this last group). While many practices, perhaps all, include appreciative elements -- winemakers are in some degree critics and appreciators of wine, just as actors may in some sense be critics of drama -- there is a considerable difference between the implication of criticism and appreciation in the production of another output, and the production of criticism and appreciation as a primary output. We all employ concepts and rules of thought, and sometimes comment on or criticize them. But we would properly be called philosophers only if our work were specialized to criticizing concepts and analyzing the rules of thought.

This discussion of practices by output throws some modest light on the place of teaching among them. For one thing, teaching seems not to be the sort of practice which reformers often wish to make it. Thus far, at any rate, teaching does not seem to resemble either crafts or technologies. The outputs of these two families of practices are objects,

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*In music and theatre such interpretation is less closely linked now to creation of the plans than it once was, improvisation having been much reduced over the centuries. While these interpretive performances often still entail great artistry, such artistry is not required for understanding and appreciation. Modest skills of reading, playing and interpretation suffice quite nicely for understanding most musical and theatrical literature. This is something we tend to forget in an age of highly professionalized and massively disseminated interpretive performance.

whereas the output of teaching is some state of individuals and groups. We often say that a teacher's work is in some respect craft-like, but this may be nothing more than a recognition that some operation seemed particularly skillful. Additionally, teaching does not much resemble that large group of practices whose outcomes are intellectual and imaginative constructs. Every practice requires and uses such constructs, and teaching uses them more than many -- one of its aims, after all, is instruction in the use of words, ideas, and numbers. Indeed, all human activity, save perhaps that of comatose persons, entails the use of such constructs. But the outputs of teaching do not require the invention or criticism of such constructs, only their communication and use. Teachers may hope their students will turn out to be mathematicians or poets, but in their practice teachers try only to help their charges understand the equations and poems produced by others.

The practices with outputs like those of teaching, then, are psychiatry, police work, preaching, politics, law, and the like. The outputs of this group of practices differ from those of other practices in one obvious way: they are neither objects nor ideas. But they also differ from the outputs of other practices in another way. The names of these outputs provide less guidance to practitioners than do the names of outputs in other practices. The outputs of indeterminate practices are much more difficult to specify for production. A silversmith, for example, is given considerable guidance about what he should produce when asked for a ring; given certain materials he can then produce it. But while a teacher can name the outputs he wishes to produce -- literacy, discipline, or civic virtue -- these names are not nearly as helpful a

production specification as the name ring. The name ring needs a few modifiers to suitably guide a craftsman -- large, silver, a simple band -- but with these his work can proceed toward a commonly understood output. In the case of discipline, however, adding a few modifiers helps much less. We can say strict and firm, but competent teachers will disagree, often quite strongly, on what discipline thus specified is. For they disagree on what discipline itself is -- is it something administered by teachers, for example, or something freely chosen by students? By contrast, silversmiths might argue about whether a large, simple silver ring was pretty, or well made, but they would not argue about whether it was a ring. Many teachers observing particular classrooms, however, will say there is no discipline in them. By this they mean that their concept of discipline is not present, of course, but this difference between teachers and silversmiths is not a mere linguistic curiosity. It signals the inherent indeterminacy of most outputs of practices like teaching or social work. The outputs can be interpreted and realized in fundamentally different ways. We know what a ring is, or what architectural plans are, but what is peace, or mental health? We can give the terms some meaning through thought and speech, though frequently we can only think of what they are not. But thought captures only a small part of what we would know about such outputs were we to create some version of the output. Creating the output doesn't eliminate the problem, for while producing an output answers some questions, it opens up others. Achieving certain sorts of equality, for example, has taught us some things about this output we never suspected, but it also has opened up hitherto unimagined problems and puzzles. Even if we could agree on all specifications of equality possible to presently think of, therefore,

those specifications would capture only a small part of what would ensue were we to try to implement the equality thus specified, and would anticipate only some of the unknowns that would be later opened up.

The outputs of indeterminate practices, then, are difficult to specify for production because they refer to only partly known and partly knowable states of being. The output names capture only a small fragment of the human behavior and organization to which they allude, and there is little stable basis for agreement about the nature of these states. It is thus no surprise that the output names in indeterminate practices provide much less clear information to guide practitioners who seek to produce them. A teacher who wishes to produce discipline confronts, knowingly or not, much more indeterminacy in her desired output than the cabinet-maker who wishes to produce a chest of drawers.

This is not to say that indeterminate practices never have clear outputs. Often they do. Courts make decisions; high schools graduate students, and teachers give them grades; social workers distribute clothes; and politicians sometimes distribute money. In general, however, it appears that these clear outputs (I will call them, for convenience, decision outputs), are seen are proxies for other, much less clear outputs, such as justice, literacy, family stability, and equality (which I will call simply outputs). It appears that the clarity of the decision outputs arises from two sources: essentially arbitrary decision rules which define them, and the willing suspension of disbelief about connections between the two types of output. The judicial system, for

example, has clear outputs: cases are decided, people are found guilty or not, and so on. This is because the judicial system forces decisions within a system of fairly well-specified rules. Instead of seeking to discover or define justice in each case, the law specifies how to decide individual cases with procedures deemed just. We assume that the procedures produce justice, but since we cannot know or agree on what justice is, the assumption in principle is very weakly grounded--though almost surely wise and useful.

Thus, while there are clear outputs of the judicial system in the sense of cases decided, the judiciary is no better at producing such outputs as equality, for example, than the legislature. Equality is no more clear in court decisions than it is in legislative hearings. It is just that the output of courts, in addition to equality, is decided cases. Similarly, the school system produces a certain number of failures every year, just as it produces a certain number of graduates. These are outputs of education, but like court decisions, their relation to the other outputs of these practices--outputs for which graduation is believed to be a proxy of sorts--is uncertain. The connection between high school graduation and civic responsibility, or discipline, or even literacy is quite unclear, as researchers and other investigators periodically discover with anxious concern. And we are occasionally reminded that there is no necessary connection between decided court cases and justice. Decided cases, like high school graduation and other decision outputs, are all defined by the application of arbitrary though quite useful decision rules about institutional procedures. As long as we attend to these rules in making the decisions, the output seems clear, lacking

the indeterminacy of justice or learning. But as soon as we try to connect an output like graduation to the other outputs of education--such as literacy, or civic responsibility--the arbitrary quality of graduation as an output becomes clear. It is easy to make procedural rules about such outputs as long as we do not ask about the assumptions on which the rules depend--like what tests of reading measure, or what the connection is between taking courses in social studies and learning civic virtue.

The outputs of indeterminate practices therefore differ from the outputs of other practices in several ways. They are, first, different in kind: indeterminate practices produce states in the behavior of individuals or organizations, while other practices produce ideas or objects. Second, because the outputs of indeterminate practices cannot be specified for production with nearly the precision found in other practices, it is much more difficult for practitioners to know what these outputs are. For these reasons it is easy for practitioners to disagree about the nature of the outputs they seek to produce, and it is hard for them to know how to produce them. This signals deep differences between indeterminate and all other practices. What is taken for granted in most practices -- the production of known outputs -- becomes a deep and perplexing problem for those who work in indeterminate practices.

I.B.2. DIFFERENCES IN THE MATERIALS OF PRACTICES

Differences in the materials of practices follow this contrast. The materials of crafts and technologies are objects: rocks, clay, metal ores, or some processed versions of these. By contrast, the materials

of intellectual and imaginative practices are the outputs of other practices, or other ideas, perceptions, and observations. If the materials of winemaking are grapes, the materials of wine connoisseurship are wines, and perceptions of wine. The materials of indeterminate practice, however, are neither ideas nor objects, but human individuals and groups. The materials of teaching are students, not ideas about students or theories of schooling.

There are many important differences among these sorts of materials, but for my purposes one stands out. The guitar maker knows that his materials can be worked according to what we might loosely call rules: a guitar made with wood one-quarter inch thick will sound differentfrom one made with wood one-eighth of an inch thick. Similarly, an economist working on the behavior of interest rates knows that these materials can be worked according to rules: the rates are computed in certain ways and not others; the rates pertain to some transactions and not others; interest is defined to cover certain sorts of income from investment but not others; and so on. At first glance, it seems that this is also true of indeterminate practices. A teacher may know that his students will be reading between ten and noon every day. Or he may know that they will be quiet if he shouts at a particular level. But the rules of indeterminate practice are different, in one critical respect, from the rules relevant to materials of other practices. In indeterminate practices the materials have volition. In order to obey the rules they must will it. The students will not be reading between ten and noon unless they make a commitment--conscious or not, compelled or freely chosen--to read.

Rules are of course conventions in some sense, and it may be objected that the rules governing the studies of interest by our hypothetical economist are no less the result of choice and convention than those governing the behavior of our hypothetical students and teacher. Perhaps. But there is this one difference: once economists have settled on their conventions about interest rates, the practice can go on in quite an orderly and regular way. One need not, in each situation, cajole the abstractions one works with, or coax one bit of data to behave in one way and threaten another to behave in another, or pass laws governing the behavior of data, or offer the data incentives to behave in one way and not another. The data will not lie there passively, ignoring the rules. Nor will it rise up, like an unruly student, an unhappy patient, or a restless crowd, and disobey or change the rules. Ideas are the product of rules, but students are rule makers. Ideas, which are the product of rules or conventions, are the materials of that family of practices I have termed intellectual and imaginative. Human individuals and groups, which are perpetually and often restlessly making and unmaking the rules by which they behave and organize, are the materials of indeterminate practices. While humans and their groups are in some sense governed by rules or conventions, it is not at all the same sense in which ideas are governed by rules. Ideas cannot choose to flout the rules which helped create them, but students can, and regularly do, choose to flout the rules they are supposed to obey.

A roughly similar point can be made about the instruments of practices -- if one likes, their tools. In crafts and technologies the tools are more or less complex fabricated objects, devised and specialized to particular tasks. And in intellectual practices the tools are chiefly ideas, though in some cases there is also a need for

instruments to gather impressions or observations. But the chief instruments of indeterminate practices are neither objects nor ideas. They are individuals, groups, and the unique social arrangements they create -- such as money, power, authority, and the like -- to carry out their affairs. If we ask what the politician's tools are, for example, the answer certainly includes such social creations as patronage, money, influence. His tools sometimes also include personal attributes, such as oratorical skills, or the ability to persuade others. There are of course many other potential instruments, but these examples are enough to suggest the categories. The politician's instruments are sometimes objects, but more often they are other people and groups, and the social inventions we loosely term power, personality, culture and the like. The instruments of other indeterminate practices are no different. Teachers, like politicians, employ power, personality and incentives to produce the outputs they desire.

These instruments of practice are of course less predictable and tractable than instruments of other practices. Teachers, politicians, and parents are often surprised, for example, about their own actions during their own performances. Their own personalities are far from being completely understood, or predictable, or manageable. In addition, all the tools of these trades are interactive. If power is a tool of political practice, it is exercised through people and organizations, not in the abstract. And people and organizations cannot always be counted on to behave as expected. Some politicians often will not assent to others' efforts to use them, and students will sometimes reject a teacher's effort to get their help in explaining something to another student. People and

organizations are the chief instruments of indeterminate practices, but they are not passive instruments. Unlike the instruments of all other practices, they must be committed to serving the practitioner's purpose if they are to be effective instruments of his practice.

I.B.3. MANAGED MATERIALS AN OUTPUT

There is a third point, which flows from joint consideration of my arguments about materials and outputs in indeterminate practices. Because the materials of practice are human individuals and groups, and because these materials have volition and thus are far from passive, there is a sense in which the management of these materials is an output in its own right. The teacher, for example, must always have some sort of order in his classroom, irrespective of other outputs of his practice, and this order should be understood as an output in itself.

This is different from other types of practice. Of course all practices require the management of materials, but in practices other than indeterminate ones, such management is not an output in itself. The cabinetmaker who nicely manages the wood and other materials of his practice is not thought to have produced an output by simply manipulating them with skill. Only when the cabinet appears, fashioned out of the skillfully manipulated parts and unfinished elements, do we say there is an output. But for the teacher managing students, their management is an output. Having a "good classroom" is important for the teacher as an end in itself. She lives there six or seven hours a day, five days a week, as do her students, and life in Bedlam can be quite horrible all by itself. In just the same sense is it important for the therapist to have patients who talk, rather than sleep or stare absently at the therapist while picking their noses.

Therapy is supposed to consist of talking (albeit with some silences), and a therapist whose patients were all silent, like a teacher whose students were all noisy, would be in a social situation which most therapists would find difficult to bear. In part this would be because the patients' silence, like the students' noise, suggests the absence of other outputs further on. But in part it would be because silence would disrupt the sense of how the setting is supposed to be--just as noise would disrupt it in the classroom. The therapist whose patients don't talk enough, like the teacher whose students talk too much, would be thought unable to manage the setting of her practice.

It would seem that most indeterminate practices have such ongoing managerial outputs. Lawyers' clients have to follow certain rules in many, though not all the settings in which they interact with lawyers, and the output here is a process, or a state of an organization. Like the teacher's orderly classroom, the well-ordered judicial proceeding can be thought of as a means to an end, but the practitioners also treat the state of the organization as an output in its own right. The same thing can be said of many other indeterminate practices, such as parenting and police work.

One implication of this is that most or all indeterminate practices have plural outputs. The teacher must produce an orderly classroom and reading too; the judge must have both a properly managed courtroom and a decision. This, in turn, means that practitioners often must address themselves to two or more outputs at the same time. This is quite unique to indeterminate practices: the silversmith does not have to produce both rings and necklaces out of the same material at the same time. Producing two outputs at once is therefore a regular, though perhaps not a universal

feature of indeterminate practice. This is important for several reasons. One is the need to notice that in many of these practices an output is always being produced: the teacher's classroom must have the order he wishes, whether or not anyone is reading. It is easy to lose sight of this in thinking about the outputs of practice, and attend only to such things as reading. A second point is that ordinarily the teacher is not attending to one or another of these outputs, but both. This has a great effect on practice, for in those cases where both outputs must be produced by the practitioner, his or her performance strategies must be adapted to this unique and complex task. Teaching reading is ordinarily also maintaining discipline.

Finally, even this cursory discussion probably suggests to many readers that these managerial outputs are not equally problematic in all indeterminate practices. The teacher in the public school classroom is much more seriously preoccupied with them than, say, the psychiatrist in private practice. These differences are important, for among other things they help to shape what practitioners do. But the difference does not mean that the outputs are less important to the psychiatrist's practice. For even though the psychiatrist's patients behave themselves as he wishes without much or any attention from him, it is essential to his practice that they behave themselves in some ways and not others. Without going very far into the reasons why the psychiatrist's patients produce this output of his practice with little or no attention from him, it seems clear that if <u>they</u> do it, the causes have little to do with his knowledge, skill, or other operations which he performs. There are features of his practice to which he does not attend, which encourage his patients to manage their behavior for him. This single fact creates a great

difference between his work and that of teachers.

This suggests two additional points. One is that in thinking about the managerial and other outputs of practices, we need to notice that other influences besides what the practitioners do can be important. Thus, investigations of practice should not be limited to what practitioners do. Often things they don't attend to but that are done in other ways are crucial to their practices. Second, the example suggests that the psychiatrist's patients behave themselves not because anyone was skillful, but because of some other attributes of that practice. But if students do behave themselves for teachers, it is often for the contrary reason--i.e., because the teacher is forced, by the terms of her practice, to attend to the managerial outputs of practice and develop some means--perhaps skills--for producing discipline. This suggests that there are attributes of practices which can influence what practitioners do and don't do. It also suggests that these attributes may even influence what skills and knowledge practitioners develop. And it suggests that sometimes things happen in practices--i.e., patients behaving themselves--that owe little to any practitioner's skill or knowledge.

Each of these points signals, in different ways, that in scrutinizing indeterminate practices we need to attend to more than what practitioners do, and to more than what they do with skill or knowledge.

I.C. CONCLUSION

I have identified two ways in which indeterminate practices differ from all other practices. First, the outputs of indeterminate practices cannot be well specified for production. Second, the materials and chief instruments of indeterminate practices are human individuals and groups. I have further

suggested that these two differences imply others, concerning the outputs of practice and the ways in which they can be produced. Since the implications of these two matters are central to my discussion, I will consider a few of the most important ones in more detail in the next chapter.

II. COMMITMENT AND UNCERTAINTY

Commitment and uncertainty are features of all practices, because all practitioners are human. Because they are human, all practitioners have volition: in order to take action in their practice, they must will it. This often takes the form of conscious choice; sometimes it takes the form of passive acquiescence; and sometimes volition is habitual, even unknown to the actor. But one way or another, in order to act as practitioners volition is essential. In addition, by virtue of their common humanity all practitioners must deal with uncertainty, since man's mind cannot master the potential complexities of even a simple task. An assembly line automobile worker, for example, might want to put fenders on upside down. He might try to decide whether to do this by figuring out the effects of this course of action. But there is no way his intelligence could grasp the possible consequences of upside-down placement. Somehow, his decision would have to manage uncertainty about the consequences of his choices, rather than eliminating it with evidence on the consequences.

While these two features are common to all practices, they are presented in unique form in indeterminate practices. First, commitment differs among practices: while our hypothetical assembly line worker requires volition to work, his wrenches and fenders do not. But a teacher's students do require volition--they must commit themselves to the outputs she desires, if her practice is to be successful. So must her colleagues or others who may be instruments of her practice. This is a categorical difference among practices. Second, uncertainty is much greater in indeterminate than in

other practices. In part this is due to the indeterminacy of their outputs, and in part because the need for commitment in the materials of practice multiplies uncertainty.

This chapter discusses the nature of both commitment and uncertainty in practices, with special attention to their unique role in indeterminate practices. A good part of my attention will be on delineating the nature and role of each, separately. But while I discuss them in part separately, I do this partly to achieve a better analytic grasp on their connections. Again and again I will note that while these two can be considered separately, they do not act separately. For each reinforces the effect of the other, and their connection uniquely sets the character of indeterminate practices. To practice in these realms is to deal with both. In a sense that is what is unique about these practices, and that point is perhaps the chief import of this chapter.

II.A. COMMITMENT IN INDETERMINATE PRACTICES

Commitment has an enormous impact on indeterminate practices, because practitioners must take account of it in the materials and instruments of their practice. Practitioners in all practices require their own commitment, but in indeterminate practice commitment is interactive. The practitioner's commitment depends in part upon that of his materials and instruments -- and vice versa.

Consider one type of commitment -- that arising from conscious choice. A psychotherapist is confronting a new alcoholic patient, and must make some judgment about the output of her practice in this case, and about the course of treatment as well. She may choose to define the output as no more drinking, and therefore no more drunkenness. She may, however, define the outcome as no more drunkenness, with continued drinking. The therapist's choice between these two is quite problematic, for they represent conflicting

conceptions of mental health for alcoholics. Her choice, however, is not entirely her own. She must take her patients's commitment and thus his choices into account. He may have said, in their first session, that all he wanted was to get off the booze--he didn't know how to do it and doubted he could, but he wanted to. Or he may have said that he couldn't understand why he couldn't drink in moderation, and wanted to both understand and drink. Such commitment often influences a practitioner's conception about the outcome of practice. And with good reason. This psychotherapist, like workers in other indeterminate practices, would properly doubt her ability to succeed in achieving an outcome which her patient did not in some sense choose. She may try, as part of her performance, to affect her patient's wishes, but the wishes would be taken into account.

This situation is complicated by the fact that in indeterminate practices the practitioner must take account of choices more complex than those in isolated dyadic relations between a single client and a single practitioner. Ordinarily choice occurs in situations including many interacting persons and groups. Consider a police detective trying to solve a murder. The detective must figure out who the murderer was or in some other way apprehend him. Knowledge of the criminal's choices may be quite important in this endeavor. Was it a crime of passion from which the murderer is unlikely to flee far, or was it a mob job, executed by professionals with considerable mobility? Even such simple choices are typically interactive. What the criminal did, and does, may be influenced by his accomplices, or by witnesses, or by his family. Indeed, our criminal's choices even may be influenced by how the police behave (do they seem to know who he or she

is?). Given this possibility, our police detective may wish not to give the impression that he knows his man, or woman. Or he may wish to do the reverse. These complex interactive choices become the police detective's problem, or opportunity. They too may need to be accounted for in his practice.

Such complex interactive choice is much of the stuff of teaching -- as it is, indeed, of politics or psychotherapy. The teacher devising a reading lesson for Jane must take account of Jane's possible or actual choices about the lesson -- quite likely including therein Jane's past choices about both reading and the reading teacher. But the teacher must also take into account the fact that she is not sitting on one end of a log with Jane on the other. They are in a classroom with perhaps thirty other students. The teacher must somehow take into account many things about these other students, including the choices they may make with a bearing on Jane's reading lesson. They may or may not be sharing the lesson, but by virtue of being in the same room their choices may become relevant. Johnny's choice to go to the bathroom, or to pull Jane's hair, or to do well or poorly in his lesson (not always a choice, but often one), could have quite an effect on Jane's performance in the lesson -- or on the teacher's. Somehow, the teacher's practice must take this into account.

The list does not stop here, for several other types of interactive choice may be relevant to that particular lesson. There are, for example, interactions between Jane and her fellow students or others outside the classroom -- students, parents, siblings, or college admission officers. Such persons' choices often affect students' performance. Teachers cannot always know these choices, but they must quite often cope with them, or with their effects. There also are interactions between the teacher and other adults in the school, or the school system: a central administrator's choice to administer a new test, or stop an old one; a principal's decision to begin a new reading program, or cancel recess; and so on. Such choices are regularly salient to the work of teachers and students, and when salient, they must be accounted for in teachers' performances.

But if choice is an important type of commitment, it is not the only type. Indeed, all the indications are that commitment is as much habitual or unconscious as it is a matter of conscious decision. For example, teachers do not need to affect the choices of many students to read, because they arrive in school already committed. The students' will to read is no less important to the teacher for this. It is only that the commitment has been shaped before they arrive in class, perhaps by their parents' action or some other means. Similarly, a politician often can ignore the task of persuading many voters, because their party preference is so strongly identified with his--or with his opponent--as to make the effort not worth while. Such circumstances do not mean that commitment is any less important--they only mean it is an important given for these practitioners. Teachers, for example, frequently wish to have students who are already committed to the teachers' conception of school outcomes and procedures. This is sometimes regarded as invidious--and sometimes is--but it is more than that.

It is a recognition of the essential character of volition in the materials of practice, and therefore of the greater fruitfulness of practice when the commitments of practitioners and their materials match. Thus, politicians prefer "safe" districts to hostile ones, psychotherapists prefer patients who wish therapy to those who resist it, and swimming teachers prefer students who like water to those who fear it.

Commitment is thus an important feature of indeterminate practices. Because students, patients, criminals, and citizens must will what is done with them in the practice of others--that is , it cannot be done unless they at least passively allow it – their commitment becomes an essential element of these practices. We are used to the notion that politics is in large part concerned with commitment – sometimes it is called the art of choice. But teaching, social work, psychiatry and other practices are no less concerned with commitment, and within that, choice.

This is quite unique, for in other practices only the practitioner's commitment is central. If, for example, an automobile assembler's or a silversmith's commitment to his work disappeared, continued practice would be impossible. But in teaching or psychotherapy, a very different situation obtains. Even if the commitment of the teacher or therapist continued undimmed, their practice requires the commitment of others to go forward. If their students or patients lost their commitment to these practitioners' chosen outputs or methods of practice, either something would have to change or their continued practice in that setting would be impossible.

As a result, from one perspective it seems fair to say that commitment, or volition, is a material of these practices, to be worked in much the same way as a cabinetmaker works wood. The commitments of students are an essential means to an end, a way of achieving some desired output. If the teacher can get her students to choose to read, for example, or if she can get students already

committed to reading, then her task of producing the desired output - i.e., reading - will be nearer achievement. The students' commitments are as important to producing reading as wood is to producing cabinets.

But this view of commitment does not entirely do justice to the efforts of teachers, social workers and politicians, as they try to influence the volition of various persons and groups. The teacher, for example, may believe that students ought to read even when their teacher doesn't encourage them to do so. She may therefore try to influence their commitment in this connection. This is a good part of what teachers mean when they say that they want to affect their students' "study habits." In this sense commitment is therefore not just a means but also an end of the teacher's practice. This is similar to what politicians have in mind when they try, through various means including patronage and personal acquaintance, to establish permanent allegiances to themselves on the part of voters and other politicians. And it is similar to what psychotherapists seek to accomplish as they employ varied means to encourage their patients to adopt different patterns of behavior -- that is, to commit themselves to different states of mind and courses of action. In all of these instances and many others, practitioners seek to influence commitment, very nearly as an end in itself. Of course any end can be seen as a means to some other end. But here I wish only to call attention to the fact that often producing commitment in others is not only a material but also an output of indeterminate practices.

Thus, practitioners in indeterminate practices are continually concerned with mobilizing commitment. In order to do this, practitioners may have to strike agreements with the materials and instruments of their practice, so as to to secure commitment to the practitioners' desired outputs or methods.

If these agreements do not need to be negotiated in any given case, it is only because they exist already. Such basic agreements are political, for they establish or renew power and authority, as well as consent to it. One might almost think of them as constitutions of practice. Certainly they are in some sense -- often implicit to those agreeing -- an essential feature of indeterminate practice. One reason for this is the fact that the materials of practice, as well as the practitioner, must will their participation in practice, even if it is only the will to accept some other will or overwhelming force. The parties to a practice must choose to participate on the practitioner's terms, or he on theirs, or some of each, and this creates the persistent need for some constitution -- i.e., for some rules governing the relations between practitioners and materials. A second reason for the need to strike agreements between practitioners and their materials is the indeterminacy of outputs. In all practices practitioners may disagree about the proper output, or how to produce it. But only in indeterminate practices is there the potential for such disagreement between practitioners and the materials of their practice. Because of this there is a continuing possibility that the practitioner will have a different understanding of the nature of an output than his materials, or that they will differ over the desired output, or over how it should be produced. Because there are so many opportunities for doubt and disagreement, the task of mobilizing commitment is greatly complicated. The need for commitment includes commitment to agreed aims and terms of practice. For both of these reasons, every practice and many performances within a practice require a constitution.

As a result, the statement made a few paragraphs above -- to wit, that mobilizing commitment among the materials and instruments of practice is a central and unique task of indeterminate practice -- is incomplete. One must add that this mobilization must either assume or provide a constitution governing the relations of practitioner and his materials, to deal with the continuing probability that doubt or disagreement will disrupt the joint commitment required for practice. There are, of course, varied ways to do this, and conscious negotiation is only one of them. Another is to compel agreement -- by use of force. Another is to produce it through psychic incentives, such as political authority, or moral or religious belief. Another is to allow it to happen through myriad small interactions, such as occur in voting.

This work of negotiating contracts or constitutions can thus be attended to consciously by practitioners, or it can be managed by other, larger means (consciously or not), or it can result from some combination of the two. Schoolchildren's attendance at school, for example, and their attention to their lessons, is ordinarily not the exclusive responsibility of teachers. The commitment in question here is produced in part by the state, as it compels and supports public education, in part by parents as they encourage schooling and learning, and in part by other economic and social forces which encourage parents to wish to have their children attended to a large part of the time. But however some agreement between the commitment of practitioners and their materials is arranged, it must be done. Constitutions or contracts are needed in these practices, to bind together the commitments of practitioners and their materials. And this constitution is at least in principle open to continuing challenge, due both to the volition of materials and to the indeterminacy of

outputs. Arranging such constitutions is thus a continuing--though hardly a continuous--task of practice. Silversmiths, by contrast, need not contract with their silver.

Much of the uniqueness of indeterminate practices arises from this one fundamental element, and it once again suggests the interlocked character of commitment and uncertainty in indeterminate practices. For while the need to attend to the constitution on which practice rests arises uniquely from the presence of volition in the materials of practice, this need is multiplied in its force by the uncertainty arising from indeterminacy in the outputs of practice. The presence of this uncertainty sharpens the need for commitment because it increases the probability of divergent conceptions of a given practice or performance, and this makes the mobilization of commitment an even more important task of practice. Needless to say, uncertainty also makes the mobilization more difficult, because of the continuing doubt about what commitment is being mobilized for.

II.B. UNCERTAINTY IN INDETERMINATE PRACTICES

In a different world, everyone might know what to do, how to do it, and what would happen as a result. In this world we usually have very imperfect information on these points. As a consequence, all human practices are marked by considerable uncertainty. The plumber fixing a leaky faucet cannot be sure--often until he has the mechanism repaired--what the matter is. Consequently he takes steps to deal with this uncertainty: he comes equipped with materials to remedy most or all of the possible faucet disorders; he first repairs what seems to be the trouble, but then tests the result to see if the leak is indeed fixed. If not, he fixes something else and tests again. Or, alternatively, he may simply replace the leaky faucet with a new one, shortcutting the need for figuring out, step by step, the faucet's defect. Each of the procedures manages uncertainty. Fixing a faucet is a relatively simple task, but it is nonetheless marked by appreciable uncertainty.

Compared to indeterminate practices, the uncertainties this plumber faces are modest. For one thing, in most cases teachers or social workers know less about any one of the particular tasks they must perform: fixing a reading problem, or even a problem with spelling or computation, is a more complex operation with more relevant unknowns than fixing a leaky faucet. We know, for example, that the plumber's leaky faucet problem is almost surely comprised in the faucet mechanism. But we do not know whether the student's reading problem is comprised in the mechanism of his eye (perhaps he just needs glasses), or in the operation of his brain (he may be dyslexic), or in certain difficulties he may have with the reading texts in his school, or in his dislike of his teacher, or in emotional problems at home. Each of these taken alone is more complex than a faucet, and most teachers facing any one of them know less about it than plumbers know about faucets. For another, as the mere array of possible explanations of the

reading problem suggests, there are more things to be uncertain about in reading than in plumbing. Thus, in indeterminate practices the level and scope of uncertainty is much greater than in other pratices.

I have already suggested some of the sources of this. Perhaps the largest contributor is the fact that practitioners are typically unclear about their task. The outcomes are indeterminate. Unlike the plumber, teachers or politicians don't have a leaky faucet--with the attendant clear notion of a non leaky faucet--to repair. Quite often workers in indeterminate practices find themselves in the situation of the hypothetical psychotherapist mentioned a few pages earlier: having to treat a problem such as alcoholism but having several conflicting conceptions of what the proper outcome should be. Sometimes they find themselves in a somewhat different situation--one most typical of politicians--in which an insoluble problem is presented, or an impossible task assigned. Legislators, for example, are often required to reduce government expenditures in the aggregate without reducing outlays for any given program. Or they are asked to solve the problem of poverty, when the nature of the problem is a matter of serious controversy, when solutions are vague but no less controversial, and when the resources for many. if not all the solutions are unavailable.

Thus, what is mostly taken for granted in other practices--what a fixed faucet looks like, or how a classical symphony is organized--is persistently problematic in indeterminate practices. The nature of the outputs is subject to continuing challenge, controversy and doubt. Not knowing what one is supposed to do--or, alternatively, knowing that there are terrific disagreements about that point--is a source of considerable uncertainty. And it lies right at the heart of practice. The plumber is uncertain, but only

about how to produce a known output — the fixed faucet. The teacher, by contrast, is uncertain about what his output is.

Of course, if the teacher is uncertain on this point he will therefore also be uncertain about how to produce his output — more uncertain than the plumber. Uncertainty about what to do increases uncertainty about how to do it. For the plumber, uncertain about how to repair the faucet, has one great comparative advantage: after every attempt at repair, he can turn the faucet on and determine if it still leaks. That is, he can check his performance against a known output, using his relatively sure knowledge of the output as a criterion for his practice. By and large, workers in indeterminate practices cannot use outputs as guides to action in such a sure way. All teachers, for example, must have some discipline among their students, and discipline is not an unusually indeterminate outcome. It is, in fact, relatively uncomplicated as these outcomes go. Nonetheless, it does not provide a ready guide to action. For one thing, there is plenty of room for the teacher to be uncertain about what discipline is: is it quiet students? quiet students who are working? quiet students who are working and learning? noisy and active students who are learning?

Let us assume the easiest case -- a teacher who believes that discipline is simply quiet students. This output can be specified for production. But by itself it is not enough. Quiet students are not the equivalent of a faucet. If the students are only quiet, sooner or later this teacher, or some of her students, or someone else, will ask why the students are only quiet. Why are they not at least doing schoolwork, or even learning their lessons? No one asks, by contrast, why the repaired faucet does not produce the mixed drinks of which water is a part. Like all outputs of indeterminate practices, even the narrowest conception of discipline implies other outputs which are much less narrow and thus much more problematic. And all of these other interpretations are difficult to specify for production. If, for example,

a teacher believes that discipline means students who are quiet and working, he still needs a notion of what working means. If it means that students seem to be working--i.e., are looking at their desks--the teacher can easily check this by surveying the room with a glance. Or he may simply assume work is going on until he is disturbed by strong evidence that it is not. But if he means attending to a task of schoolwork, then these solutions won't do. The teacher would have to somehow check on each student, to determine if they were attending to anything. Perhaps they were only staring vacantly into the desk top. And if attending to some task, was it schoolwork or Mad Comics? Further, if they were attending to schoolwork, how? Were they doing the work or staring at it? If doing the work, were they doing so effectively, or repeating the same mistakes? Or working so slowly as to arouse worry, or suspicion? Or so quickly as to arouse concern that they would miss the points?

Even this relatively simple notion--quiet and working--thus turns out to be complicated by the varied conceptions of what "working" might mean in the context of a schoolroom. While there is some guidance for teachers' practice in this conception of discipline, it is much less specific than the guidance to be found in the outputs of other practices. And if we include learning in the conception of discipline--which nearly all teachers do--things become even more problematic. For learning is an even less determinate concept than working, subject to even more interpretations. Each of these interpretations of course provides some guidance for practice, but the guidance is quite modest compared with the outputs of other practices.

In this respect, discipline resembles most outputs of indeterminate practices. It is a weak guide to practice partly because discipline has

several different or competing meanings, and partly because nearly all of the things it might mean are inherently difficult to specify. On both counts, practitioners in indeterminate practices experience a good deal more uncertainty than workers in other practices.

By itself, this would be uncertainty sufficient to greatly complicate practice. But uncertainty arising from the indeterminacy of outcomes is multiplied many times by uncertainty arising from volition in the materials of practice. Teachers often feel they know how to help Johnny learn to read, if only he would sit still. But he will not, and the teacher is thus relatively helpless. This complication is typical. The teacher seeking to produce discipline (students who are quiet, working and learning, let us say) faces a chain of potential uncertainties. Before he can produce the desired discipline, his students must wish to be quiet, they must wish to work, and they must wish to learn. They may make these commitments themselves, without any effort on the part of the teacher, but the teacher may have to make monumental efforts to encourage the commitments he desires. Whatever the case, the teacher cannot always count on students' commitments. This situation is quite unique to indeterminate practices, because only in these practices can the instruments and materials of practice will their response to practitioners' efforts to use them to produce some output. This is therefore a major unique source of uncertainty, for no output can be produced in an indeterminate practice unless the materials and instruments of practice commit themselves to that output.

This highlights the interlocked character of commitment and uncertainty. Uncertainty arises uniquely from the indeterminacy of outputs in indeterminate practices, but this uncertainty is multiplied many times by the uncertainty

arising from the volition of the materials of practice. Each output, uncertain in itself due to its indeterminacy, is also uncertain because it can be accepted in a somewhat different sense by each person or group with whom a practitioner works. Or it can be rejected. For the outputs of practice are not handed down from on high. Even if they were decided on long ago, they must be accepted and thus in some sense re-invented by the practitioner and the materials of his or her practice. The uncertainty arising from the need for commitment is thus in practice joined to the uncertainty arising from indeterminate outputs. The joint effect of indeterminate outputs and volition produces uncertainty much greater than that arising separately from each. Resolving or managing this uncertainty is not simply a matter of deciding or knowing what to do, but also a matter of securing others' commitment to do it.

II.C. EFFECTS ON PRACTICES

Indeterminate practices thus contain uncertainty which is not only greater than that found in other practices, but different. This has deep effects on the nature of practice. One of these effects concerns differences in the connection between skill and outputs.

II.C.1. DIFFERENCES IN THE SKILL-OUTPUT CONNECTION

In all practices, practitioners must mobilize skill and knowledge to create outputs. The connection between skill and output is central to practices. But this connection is much weaker in indeterminate than in other practices. Uncertainty about the nature of output and how to produce it much reduces the ability of workers in indeterminate practices to control output with skill. A more skilled potter will produce better products than a less skilled one, because his greater skill gives him greater control of the

materials: his pots will be less likely to collapse, to develop holes, or to have the glaze run off. The chances are good that he will produce not only technically better products but more of them, again because the control of materials deriving from his skill will permit faster work. But this control is not nearly as pronounced for teachers, psychiatrists, or policemen. They appear to vary considerably in skill, yet often evidence reveals little connection between skill and output. Much testimony of teachers, for example, seems to support this. They wonder if their skill produces learning; they worry that it does so only for talented students who would learn anyway; they say that if their skills do produce results, these outputs are often or even typically invisible, becoming known much later when students are gone from classrooms.

Similar observations are common among psychiatrists, pastors, parents, and other practitioners in this category. Outputs, of course, do occur in these practices. Children learn, just as patients often improve and parishioners' problems are sometimes solved. But in the eyes of both practitioners and independent evaluators, these outputs are often irregular or unexpected. Often they do not seem to occur in the cases in which the practitioner thinks he has performed most skillfully.

Thus, in both crafts and technologies there is considerable control of tools and materials by skill, even though the two sorts of practices differ greatly in the ways this control is manifest, for in technology <u>the process is skillfully designed</u>, even though individual operations are highly divided and little skilled, while in craft the central skill is the craftsman's control of an entire production process, or large chunks of it, integrating

many elements through quick improvisation.* But control of that sort is quite foreign to any indeterminate practice. Thus, while practitioners' work in indeterminate practices sometimes seems to resemble the work of a craftsman, or an industrial worker, such apparent resemblances can be misleading. Practitioners in teaching or psychiatry, for example, may have as much freedom to decide about their output as carpenters or potters. And like craftsmen, these practitioners make many decisions on the job. But in indeterminate practices practitioners cannot know at the outset of a performance, with the certainty characteristic of craft or technology, whether their prescriptions and decisions will produce the desired outputs. Similarly, teachers may thus behave in ways reminiscent of technological practice -- they may look as though they are peeling potatoes, or working on an assembly line -- but such technical-seeming behavior is not part of a larger, artfully designed process which produces uniform outputs.

Thus, while teaching and other indeterminate practices often resemble craft or technology, the resemblance is not fundamental. Because of both uncertainty and volition in their materials, practitioners in indeterminate practices cannot control output with skills to nearly the same degree that workers in other practices can.

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*So great is this control of tools and materials that uniform output can be produced in crafts as well as technologies. In a technology output is of course standardized, but one mark of a craft is that given reasonably similar materials, uniform output also can be produced. The mark of a fine cabinetmaker, for example, is that he can produce the same well-made cabinet, time after time, using fairly simple tools. This uniformity is, in fact, a chief pride of craft: given variable materials and fairly simple tools, a good craftsman can leave his mark quite clearly on the finished product. Many choose not to, of course, but the capacity to do so--even approximately--bespeaks a powerful control of output by human skills and knowledge.

II.D. CONCLUSION

One useful way to summarize this discussion of commitment and uncertainty is in terms of the necessary tasks of indeterminate practices. One such task is producing the outputs of practice. But in order to do this it is necessary to mobilize commitment in the materials and instruments of practice, to the outputs of practice. That is a second task. And this task is unique to these practices, because in all others only the practitioner's commitment is salient. In addition, this task is greatly complicated by the considerable uncertainty which attends indeterminate practice. Not only does commitment have to be mobilized, but it must be done in the face of much more uncertainty than is found in other practices. This means that often mobilizing commitment entails a negotiation about outputs between practitioners and their materials.

This suggests there may be differences in the nature of competence among practices. In most practices, practitioners can know what a competent performance is--it is producing the desired output. They are guided in this by pretty clear knowledge of their outputs, among other things. In these practices producing a competent performance and producing the output are one and the same. In indeterminate practices, however, practitioners are typically much less clear about the nature of competent performance, insofar as that is defined by the nature of output and knowledge of how to produce it. For the outputs are indeterminate. As a result, practitioners in indeterminate practices often must produce competent performances given uncertainty about the nature of competence. This may be a difference in the nature of competent performance. The competent practitioner may not just be the person who can produce the desired output well, as in other practices. It may also be the

person who can produce a performance which seems competent, given uncertainty about the nature of the output and how to produce it.

In a sense, then, competence in indeterminate practices may often be analogous to finding a way through uncertain terrain, both for oneself and others, all the while maintaining the others' commitment to both the output and the journey. If this is true, it is a sort of competence quite unique to indeterminate practices, and it is certainly not well understood. But this view of competence focuses on the practitioner, and once again, it is important to point out that practitioners may not have to rely exclusively on their own resources to do the work that can be done through competence. There may be features of indeterminate practices, quite independent of practitioners' skills and knowledge, which help to maintain the sense of their competence. Specialized degrees may be an example, as may formal titles. In either case, the unique character of competence in these practices deserves some attention.

Finally, the connection between uncertainty and commitment suggests a paradox. The outputs of these practices often are deeply, troublingly uncertain. Yet because the materials of practice must will their participation in practice, commitment is essential. Uncertainty seems the antithesis of commitment, but in these practices commitment must nonetheless be fashioned in spite of uncertainty. This paradox sums up what is unique in the work of indeterminate practices.

III. COMPETENCE AND PROCEDURE

On my account, then, uncertainty is a central problem in indeterminate practices. I do not mean by this to suggest that practitioners in these trades spend most of their time fretting about what they don't know, or cannot do. While they certainly do more of this than their colleagues in many other lines of work, many practitioners seem to attend little to the uncertainties I have discussed above. Thus, if we attended only to what was in their consciousness, we would say that uncertainty was not a problem in their practice. But whether or not they spend much conscious time worrying about it, uncertainty about their outputs and how to produce them is nonetheless a central feature of work in indeterminate practices. My reason for saying this is that even if they seem inattentive to uncertainty, their practice is carried out in ways that are distinctively designed to deal with the particular uncertainties of these practices. Teachers, psychiatrists, politicians, and others spend much time performing in seemingly competent ways, and appearing to attend not at all to the great uncertainties that underlie their work. Yet if we scrutinize their performances, we will find that they depend very heavily on operations uniquely adapted to the uncertainties of indeterminate practice.

These operations are the focus of the discussion in this section of the book. For it is just these operations that are the features of competence distinctive to indeterminate practices, and it is these distinctive features of competence that interest me.

Thus, I am not concerned with the ways, if there be such, in which teachers can reliably produce reading in their students, or in which politicians can reliably get elected or solve social problems. To the extent that there are skills and knowledge in indeterminate practices that work with the reliability

and regularity that skill and knowledge in carpentry or wine making do, I am uninterested in them here. I am instead concerned with the ways skill and knowledge are changed or adapted to deal with the great uncertainties of indeterminate practices, and the consequent need to derive ways both to produce outputs in spite of the uncertainty and to perform competently in the absence of output. My strong belief is that there are relatively few realms of indeterminate practice in which reliable skills and knowledge, analogous to carpentry, can be found, but I don't wish to estimate how few, nor do I wish to argue about what proportion of competence in these practices is like competence in carpentry or wine making. I simply observe that in large part, competence is not of that sort, and note that my interest is in what is unique to competence in indeterminate practices.

My concern in this chapter and the next will be with what I term procedure. For one way to produce performances that allow practitioners to carry out their work despite uncertainty is to employ procedures that will be thought competent even if the desired output is not forthcoming. The psychiatrist who convenes a group of colleagues to advise him concerning a particularly difficult case -- and who follows the advice -- would ordinarily be thought competent even if the case turned out badly. The detective who, in investigating a gangland murder, employs procedures standard for such cases, ordinarily would be thought to have performed competently even if the murder remained unsolved. As the examples suggest, I use the term procedure here in a particular sense. I do not mean it to cover any operations a practitioner might follow: I wish to exclude such procedures as taking a vote, because they do not depend heavily or at all on practitioners' skill or knowledge. I wish also to exclude such operations as performing rituals, because while they do seem to depend on skill and knowledge, they are often improvised, and occur one time only. The latter

exclusion is because I want the term procedure here to cover operations that have considerable regularity--a recurrent order that can be known to practitioners or to observers of practice. I do not, however, want to exclude procedures that practitioners use unknowingly, for some of these can be deemed competent -- standard operating procedures, for example -- even though their users do not know the procedure's name. Nor do I wish to exclude procedures if the grounds for their contribution to competent performances are unknown to practitioners, for few of us are sufficiently self-conscious to know many, or sometimes even any, of the reasons why a particular performance is competent. Indeed, even if we think we know, we are often unable to articulate the reasons.

Thus, procedure in the sense I use it here has a set of particular meanings. I have not offered a particularly tight definition and would make no serious logical claims for it. But all I wish to do is to draw boundaries around a class of phenomena that can productively be considered together.

III.A. TYPES OF PROCEDURE, AND THEIR UNIQUE ROLE

Two main dimensions seem helpful in sorting out the procedures I wish to consider. One dimension, perhaps the more important, is whether the procedure deals with the uncertainties of indeterminate practice by confronting them explicitly, or instead manages the uncertainties in a tacit fashion. Formal consultation, for example, is a type of procedure in which uncertainties are dealt with by explicit means, and it is commonly used by practitioners in indeterminate practices. Thus a psychiatrist might deal explicitly with uncertainty about a problem of practice -- let us say a suicidal patient -- by asking advice about what to do. In so doing she consciously confronts uncertainty, and asks others advising her to do the same. Advice, however, is not a necessary feature of such explicit confrontation. A detective planning his attack

on a rash of arson cases might, entirely by himself, carry out extensive analysis of the cases, seeking in all this to identify a posible culprit. Judicial and quasi-judicial procedures are also an example of explicit confrontation of uncertainty. In such proceedings, uncertainty about a course of action is treated as a formal dispute, in which adversarial argument and other means are employed to improve the probability that the strengths and weaknesses of competing views will be brought to light, all as inputs to an eventual decision.

One might object to lumping all these procedures together under the rubric of explicit confrontation of uncertainty, saying instead that what I am really considering is just different practices -- law, psychiatry, and the like. But while it is true that formal consultation is found more often in psychiatry than in teaching, and adversarial proceedings are much more typical of law than of social work, these varied methods of explicitly confronting uncertainty are not specifically tied to particular practices, either in principle or in experience. Quasi-judicial proceedings, for example, are widely used by politicians and administrators in regulatory agencies; they are also employed in many practices to settle disputes about disciplining practitioners; and they are now employed in school systems to settle such issues as the best educational plans for handicapped children. Similarly, while formal consultation is associated with medical practice in its origins, it is now employed in a wide variety of other practices and settings. It is used to help settle such different problems as those of civil engineering on the one hand, and educational evaluation on the other. While many of the procedures have their origin in particular practices, then, and may indeed still be more closely associated with some practices than others, they are fairly widely used across practices. More important, they represent different and distinctive ways of dealing with uncertainty. This last is of course not the only function of these procedures,

but it is one of their significant roles. I consider them here in that role, as abstract models of alternative methods for explicitly confronting uncertainty.

As I have noted, there is an alternative to explicitness. In the case of both the psychiatrist and the detective mentioned just above, their problems could have been managed in a tacit fashion, with little or no explicit recognition of uncertainty. A variety of procedures enable practitioners to do this. Standard operating procedures (SOP's) are a common case in point. An SOP prescribes a fixed step or set of steps that are always followed in particular situations. The psychiatrist who seeks formal consultation about how to treat a suicidal patient in our example above might thus be replaced by one who always does the same thing in such circumstances -- namely, prescribes large doses of tranquilizers. This psychiatrsit can use such an SOP with little or no attention to the many uncertainties that the case contains. In this instance the practitioner has "managed" the uncertainties by leaving them undisturbed. They are dealt with inexplicitly, as opposed to the conscious and deliberate confrontation that such procedures as consultation entail.

Another example of tacit procedures is trial and error -- that is, selecting possibly effective operations from a pool, until one that works is found or the pool is exhausted. Here it might be objected that neither trial and error nor SOP's are procedures in the same sense that formal consultation or adversarial proceedings are. They are instead commonplaces of human thought, no more particular to the practice of teaching than to cleaning a kitchen. It is true that such procedures are commonplace in that sense, but it is also true that their content varies from one practice to another, and that such procedures are devised and learned by practitioners in particular practices. More important, as common as such procedures are in human thought and action, they are also a distinctive

alternative to procedures that explicitly deal with uncertainty, and it is this contrast which suits my purposes here. The fact that a teacher and a kitchen maid both use SOP's does not at all impeach the uniqueness of SOP's as a representative of tacit ways to manage uncertainty, about either teaching or cleaning kitchens. Nor does it interfere with comparisons to procedures that deal explicitly with uncertainty.

There is, however, one noteworthy difference between tacit and explicit procedures to which this brief discussion points. Tacit procedures are found everywhere in human thought and action, but explicit procedures are not. For one example, tacit procedures are regularly employed as sub-elements in explicit confrontation of uncertainty. The detective investigating the arson case above, for example, might always engage in the same explicit analytic operations as he consciously confronts uncertainty about who might have set the fires. He would thus be employing a standard operating procedure for explicit analysis. Or, our hypothetical psychiatric practitioner might request formal consultation about whether to use an SOP. Or she might simply reflect on the various uncertainties implicated in a problem of practice, weighing them before deciding whether to employ an SOP. In addition, practitioners are on occasion keenly aware of the uncertainties underlying a procedure even as they use it without debate on its merits. Tacit procedures are thus found always and everywhere, and are employed in a variety of ways.

By contrast, procedures that deal with uncertainty by some form of explicit confrontation are not ubiquitous, nor can they be used in the same varied ways as tacit procedures. SOP's, trial and error, and recipes of practice are common features of human thought, found everywhere in practices, but explicit procedures are not. They are quite singular, consciously contrived methods. Relative

to tacit procedures, they are uncommon. They are, however, useful among other purposes for dealing with the uncertainties of indeterminate practice. They of course entail the use of other procedures that manage uncertainty tacitly as sub-elements, but depend for their effectiveness on this distinctive feature: formal operations for explicitly confronting some of the many puzzles and troubles that the human mind regularly avoids. Such operations as are found in judicial procedure, formal consultation,and other forms of explicit analysis are not absolutely unique to indeterminate practices, but there is a special connection. Carpenters do not employ adversarial procedures to decide how to make cabinets, but they do employ such procedures when trying to settle disputes about how much money they are owed by a client. Adversarial procedures are a method of explicit confrontation of uncertainty which thus far seems unique to indeterminate practices.* Formal consultation, however, is not absolutely unique -- engineers employ it, as do other practitioners who produce objects or ideas. But such consultation does appear to be a much more typical feature of the repertoire of workers in indeterminate than other practices, precisely because uncertainty in indeterminate practices is greater.

A second dimension useful for distinguishing among procedures that help to produce competent performances is whether the practitioner works alone, or as part of an interacting group. For some procedures can be used only if two or more practitioners interact in the execution, while others can be used quite nicely either by single practitioners working alone or by several working in an interacting group. Only a few procedures absolutely require two or more practitioners interacting --

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* Proposals for a science court may be the first effort to import such procedures to other types of practice.

to wit, some of those procedures that deal with uncertainty only by explicit means. Judicial and quasi-judicial procedures, and formal consultation, both require two or more practitioners interacting, the first because one practitioner must explicitly oppose another in a conflict over what to do, and the second because one practitioner must explicitly seek advice from another. Most other procedures can be employed by a single practitioner working alone, and ordinarily are so employed. But all the procedures that can be used alone also can be used by members of an interacting group, and often are.

Having sorted out these procedures in a preliminary way, the next and more important step is to inquire about similarities and differences in the ways they contribute to competent performances. But there is one point that must be dealt with before passing on to this matter. It might be objected that there is nothing about the procedures under discussion at all peculiar to indeterminate practices. I have admitted already that tacit procedures are commonplaces of human thought, found everywhere, and that some explicit procedures -- formal consultation, for example -- are found in such practices as engineering, which are not indeterminate. In fact, many practices that are not indeterminate have procedures that seem to meet the terms I specified at the chapter's beginning. Is there anything, then, concerning the procedures under discussion here that is peculiar to indeterminate practices?

There is. It is the role the procedures play with respect to competence. In all practices that produce objects, procedures are deemed competent when they contribute to output. In indeterminate practices, however, the same procedures often can be judged competent even when they do not contribute to output. In technical practices, and in crafts, the use of machines or tools is not independent of the finished product, for to watch procedure in such practices is to watch output

being shaped. To be sure, one may look at how a chisel is being held, and if it seems wrong, one may think the performance less than skilled. Yet the eye that sees the hand holding the chisel sees the hand and chisel shaping the wood. If the shape of the wood is right, then many, perhaps all craftsmen would say that the procedure was skillful, however unusual the hand-hold. The competence of the procedure depends entirely on output. There are, of course, many procedural judgments in practices that produce objects. Cabinet makers, for example, have procedures that cover everything from how to make joints best suited to different pieces of furniture to how to apply finishes best suited to various woods. One experienced craftsman can tell a good deal about another's skill simply by watching him work. He need not look at the finished product, but only at the procedures. Yet it is possible to make procedure-based judgments of the quality of work in crafts only because of the intimate link between procedure and output found in these practices. Good procedures are not valued simply for procedural reasons, though to workers they often seem pleasing in themselves. They are valued primarily because they are known to produce the desired product reliably.

This is not the case in practices such as teaching and law. Their indeterminacy means that there is no close fit between skilled procedure and output, as there is in crafts. We cannot expect a judicial victory on the basis of a well-drafted legal brief nearly as confidently as we can expect a fine cabinet on the basis of competent cabinet-making procedures. Procedure therefore plays a very different role in crafts than in indeterminate practices. In crafts, the tight connection between skill and output means that the quality of procedure is largely a proxy for the quality of output. But in indeterminate practices, practitioners cannot control output so closely, and determining whether appropriate procedures were used is thus often the only way of determining whether there has been good

practice.* Procedure is therefore a partial substitute, rather than a simple proxy for output in guiding and evaluating practice. In other practices, procedures are only a means to output, but in indeterminate practices they are in addition an end in themselves, or perhaps better, a means to an end unique to indeterminate practices: producing performances that seem competent given uncertainty about output and the role of skill in producing it. While in all other practices being skillful means producing the prescribed output, in indeterminate practices the meaning of skill appears to be expanded, to include both producing output and performing well when output, and how to produce it, are uncertain. This is a great difference in the character of skill, and it suggests something of the unique role that procedures play in indeterminate practices. I now turn to the question of how they play this role.

III.B. WHY PROCEDURES SEEM COMPETENT

This discussion is a bit complicated, for it has a dual and seemingly contradictory purpose. My chief point here is to develop a list of the types of procedure that contribute to seemingly competent performances, and to explore reasons why these procedures seem competent. Thus, one central theme in what follows concerns the ways in which practitioners' skill and knowledge can justify performances, even when that skill and knowledge doesn't produce the desired output. But at the same time, I wish to call attention to the fact that practitioners' skill and knowledge is insufficient to independently justify performances. In order to do this I will call attention from time

* Of course nothing in human practices is absolutely certain: the craftsman who uses a particular procedure to finish wood cannot be certain that it will produce the desired output, and he uses the procedure because of the strong probability, not the certainty, that it will produce the output. But in practices that produce objects, these probabilities are usually quite high, while in indeterminate practices they are much lower. It is this difference in the probabilistic association between procedure and output to which my discussion refers.

to time to the limits on knowledge and skill as the basis for justifying performances, and to the need for other justifications, unrelated to technical skill. While a little complicated, both sides of the argument are helpful in appreciating the unique character of competence in indeterminate practices.

To help a bit in managing the exposition, I have found it convenient to distinguish between tacit and explicit procedures.

III.B.1. TACIT PROCEDURES

How is it, then, that such commonplace procedures as trial and error, SOP's, and recipes of practice contribute to competent performances in indeterminate practices? A teacher, for example, may use trial and error to improve a student's reading. Not knowing the source of the problem, she might turn first to diagnostic tests. If that doesn't help, she may call in a reading specialist. If that doesn't work, she may schedule a conference with the parents; and so on. While any of these operations may solve the problem, none are regularly effective. Yet even when the problem is not corrected, the performance will often seem competent. Why?

One reason appears to be association -- that is, each of the steps tried has worked on other occasions. Diagnostic tests don't always locate the problem, but sometimes they do, and thus are worth trying. A second reason is that even though the teacher might not know that she is using a procedure called trial and error, her operations provide a way to attack a problem whose character is little known and whose solution is unclear. With trial and error Johnny's teacher can therefore manage her task of searching for what seems a competent way to improve his reading, even when she doesn't know why the problem occurred, or what its solution is.

The same thing can be said of the other procedures of this type. Using SOP's -- let us say, always listening primarily to parents' views about reading problems --

is an example. While this might fail to produce better reading for Johnny, it nonetheless could be defended as competent on the grounds: (1) that it sometimes did produce that output for others; and (2) that in the absence of a comprehensive view of the problem, or a solution, the procedure provides a sensible way of attacking the problem. Recipes of practice -- i.e., methods of work that are sufficiently precise to define an approach to practice and some particular operations, but are too general to make many particular prescriptions -- seem competent for the same reasons. Freudian psychotherapy does not solve all psychic problems, and many patients treated in this method do not seem to improve. But no therapist can master all methods of psychotherapy, or of diagnosing psychic problems. In fact, from the perspective of a neutral observer, the therapist's or teacher's problem is finding a method of practice that will work often enough to be defensible -- not finding one that will always work. Of course practitioners typically do not search consciously for such a method. But whichever of the recipes for psychotherapy or teaching reading they choose, it can be defended, when it fails to produce the desired output, on the grounds, first, that in many other cases it did produce the output, and second that it is in any event a reasonable way to attack a murky problem.

It is worth noting that these two warrants for the competence of performances are somewhat different. The first -- i.e., that the procedure in question produced output in similar circumstances at other times -- is really an output-based claim, an assertion about output modified by implicit recognition of the modest probabilistic association between procedure and output in indeterminate practice. The procedure in question can be used competently in part because it produced output on other occasions: while there is only a modest probability that it will do so again, the similarity of this situation to others is sufficient to justify the procedure's

use. Thus, while the practitioner's competence in using such a procedure does not depend on the output being produced in every case or even in most cases, the claim to competence is nonetheless oriented to output. It is competence by association. Ordinarily it would be very difficult to sustain a claim to the competence of a procedure when employing a procedure that had only rarely produced the desired output in similar circumstances.

The other warrant discussed here has a somewhat different foundation. In justifying the use of a procedure on the grounds that it helps in making one's way through uncertain territory, one is at least implicitly claiming two things: first, that either no one knows what the solution is, or that there is much disagreement about what it is; and second, that therefore no distinctively best way of solving the problem in question is known. Given these conditions, such procedures as trial and error or SOP's provide a uniquely suitable way to attack the problem. For they are efficacious not just because they entail elements, or sub-operations, that have produced output on other occasions, but also because they provide a way of selecting, combining, and applying these sub-operations which does not depend on any comprehensive or even considerable understanding of the nature of the problem or its solution. SOP's and trial and error are employed in such situations precisely because they make it possible to get a start on the problem just when one lacks much understanding. Here the warrant is not associative, but depends on implicit claims about useful strategies for human problem solving.

If these are somewhat different warrants for the competence of a particular performance, one noteworthy feature they have in common is that neither requires that the practitioner be explicit about the uncertainties in question. Both are in fact nicely suited to the many performance situations in which practitioners

must act, even though they have little conscious grasp on the nature of the problem or what might solve it.* In such situations the practitioner must of course know a few things. He must, for example, know enough about the problem to roughly categorize it -- i.e., it is a reading problem, not a computational problem. And he must know that the procedure he then employs has worked on enough other occasions to be creditable. But he need not know why this is the case, or much more about the problem in question. Nor need he even know the name of the procedure he employs, or why it is competent. Practitioners can produce performances that depend on such procedures with little or no conscious attention to the decisions they make, or to the justification for those decisions.

Even this brief account reveals that performances that depend heavily on tacit procedures are not produced with much regard for logic. One might note, for example, that if practitioners know enough to distinguish computational from reading problems, they must have some of the very kind of knowledge that tacit procedures are supposed to minimize. And if they do have such knowledge, could one not ask whether the judgments they make with it -- such as deciding that a student's problem is reading, and not computation -- are competent? After all, these judgments will have much to do with the sort of performances that are produced.

Sensible as the questions are in logical terms, often they have no answer in such performances. Practitioners must know some things in order to practice, but one part of the utility of tacit procedures is that they make it possible to perform in the many situations in which little knowledge is available, and there is no

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* The procedures discussed here can, of course, also be employed with conscious knowledge about these two points, as part of procedures for explicitly confronting uncertainty. And the procedures can be used by an interacting group of practitioners, as they try to solve a problem of practice. But one very common use of tacit procedures is probably by practitioners working alone, and little aware either of the procedures they are using or of the procedures' role in producing competent performances.

time to get more -- the demands of logic notwithstanding. These procedures also make it unnecessary for practitioners to focus on the process of justification that often would ensue were they to try to explain the basis for decisions that a problem was of one sort and not another. For lacking output to justify the decision -- and it is the competence of just such incomplete performances that is in question here -- practitioners could only argue that there were some signs that the situation in question resembled others, and that in their experience the decisions they took in this case did produce the output in other seemingly similar cases. And this reply only repeats the earlier justification, referring the questioner to unverifiable assertions about experience and other cases. The experience and the other cases are perhaps real enough, but they cannot be checked to satisfy the demands of logic. Thus, reason and evidence offer inadequate justifications for such performances -- at least inadequate to those, like ourselves, who stand outside the situation.

Some commentators interpret this logical inadequacy as evidence of weakness, not just in the justification of performances, but in their execution as well. They assert that because performances must rest on some evidence and judgments about such matters as the nature of the problem, the appropriate response to practitioners who attend only a little to such matters is to improve their ability to attend more -- to observe, analyze, and decide. These commentators argue, in short, for the reform of practices through various analytic procedures that will make the seemingly inexplicit features of practice conscious and explicit. By making hitherto hidden elements of performance available for conscious inspection, comparison, and evaluation, practitioners will be able to incorporate both the analytic procedures and the ensuing determinations about which operations are most effective into their subsequent performances. It is thought that making the judgmental foundations of practices much more explicit will make it possible

to bring much greater rationality to practitioners' determinations about their work, and this will improve its effectiveness. I will turn to an examination of explicitness in managing uncertainty in the next chapter, but here I wish only to note that there is an alternative view. It is that the logical problems with justifying performances that depend on tacit procedures reveal the impossibility of doing so only on the grounds of reason and evidence, and thus the need for additional or alternative justifications.

One reason for this view is the considerable indeterminacy in the work of these practices. We simply do not know, definitively, what justice is, or what the right outcomes of education are. Nor, for reasons of that uncertainty among others, do we know how to reliably produce many of the outputs of these practices. The indeterminacy is a given, at least for the time being and the foreseeable future, and so we must often have other grounds for deciding whether one course of action or another is justifiable. The consent of those on whom practice occurs is such an alternative. There is a long tradition in politics and political thought which holds that lacking perfect knowledge of justice, the common good, or other ends of human society, the consent of those constituting the society is the best alternative. Some reasoning of this sort seems to underlie the widespread presence of consent as a justification of performances in indeterminate practices, for there is a multitude of cases in which neither the practitioner nor his materials can produce substantial evidence that the procedure is question will produce the desired output.

But, someone will say, there are many cases in which politicians or teachers do know what they are doing, and can produce the desired outputs with some regularity. In such cases, would not reason and evidence alone suffice as justification for a performance? I think not. For the materials on whom teachers and politicians

practice are humans, having reason, will, and some measure of choice, just as the practitioners do. The reason and evidence introduced by a practitioner to justify a performance might well be persuasive to him, or to an observer. But before it could be persuasive to his materials, they would have to agree that it was. They would have to add their consent to the practitioner's reasoning and demonstrated evidence. While this consent may often be assumed by practitioners, it is not automatic. Thus, if we believe that rational demonstrations of effectiveness are adequate to justify any given performance in an indeterminate practice, we would be incorrect in thinking that such a justification was satisfactory in itself -- even if we know that some independent third party found the justification in question to be scientifically convincing. For the materials of practice are human, and in some essential sense they are the ones to whom performances must be justified, above all others. They add their consent to any possible other justification, in order for the performance to be successful. For if a student withholds her consent from a seemingly rational teaching strategy, or if a patient withholds his consent from an equally rational approach to his own psychotherapy, the practitioners' work will not succeed in either case. Thus, even when we might impartially judge a performance plan to be effective, standing outside the performance, if the participants in the performance do not also judge it that way, the performance will be a flop. Consent of the materials of practice is therefore, at a minimum, a perpetually necessary supplement to other justifications for performances in indeterminate practices.

Most of the time consent seems to operate just this way -- as a companion or supplement. Take, for example, the suicidal depressive mentioned much earlier in this chapter. He might have rejected his therapist's ministrations, insisting that instead of more tranquilizers he wanted considerate counseling. In such a

case, the therapist would have to persuade her patient that tranquilizers were the best course of treatment, or change the treatment, or lose the patient. In this case as in many others, the practitioner's ability to present evidence that her prescription was sound must be supplemented by her patient's consent that the prescription was sound. Competence, in this perhaps partial but in any event essential sense, is in the eyes of the beholder.

This companion role of consent is evident not only in cases of acute conflict between practitioners and their materials. Rather, it is a continuing necessary element to sustain performances, always important even when it is not always in evidence. Once alerted to this, we can find many ways in which consent is evident in performances, though often unnoticed by observers or even unknown to participants. For example, the therapist mentioned a moment ago, beginning a course of treatment with a patient, may be unsure of how to proceed. She may, in thinking about the merits of tranquilizers as against counseling, say to the patient that she regularly prescribes tranquilizers in such cases, at the same time raising her eyebrows in an interrogative gesture. The patient then has the opportunity to object, or question, or alternatively, to assent. Neither of the pair may be aware of the nature of the transaction, but if the patient assents -- even if only with a slight nod of his nead -- he has added his consent to the other justifications for the performance. Such small but critical interactions are an essential element in justifying performances. The fact that they are not always in evidence -- often, perhaps in the majority of cases, consent is assumed on both sides and needs only a little reaffirmation -- and that the reaffirmations are typically so slight, does not detract at all from their importance.

There are cases, though perhaps less common, in which consent might be

thought an alternative to competence as the basis for justifying performances. In the last two decades, for example, psychotherapy has been marked by the appearance of many new approaches to healing, including such relatively exotic varieties as Primal Scream Therapy, Erhardt Seminars Training, Essalen, and the like. These are frequently held to be incompetent by traditional, psychoanalytically oriented therapists, yet they thrive on patients and followers who claim that the treatments work. In cases of this sort, some might say that consent is substituted for competence as the basis for justifying performances. They might argue that the performance is justifiable, while incompetent, because the materials of practice accept it. But it is difficult to maintain such a distinction. Would we, for example, say that a teacher who prepared his lessons well and presented them clearly, yet failed to teach his students reading -- because they disliked him intensely -- was competent? In many cases, practitioners simply cannot produce competent performances unless the person involved -- assuming him to be of sound mind -- agrees that they are competent and commits himself to the performance. In these cases consent seems essential to competence. We might therefore wish to avoid a very sharp distinction between competence and consent. Instead, we might say that the concept of competence may have to be altered in indeterminate practices to incorporate an even larger role for consent than is ordinarily imagined.

As I mentioned earlier, this raises some troubling questions about the nature of competence in indeterminate practices, because there are so many, often seemingly tasteless, crude, or even objectionable ways to encourage consent in the materials of practice. While I will not try to resolve these problems here, the examples are useful to call attention to two points. One is that technical

competence alone appears to be an inadequate justification for practitioners' performances. The other is that consent is a necessary though often unnoticed element in the justification of performances, so important that often it seems almost to be an alternative to practitioners' skill and knowledge.

The discussion is also useful because it reminds us of one great value of tacit procedures: they help practitioners to produce seemingly competent performances without making great demands on their attention. For if all the problems discussed just above were made explicit, practitioners might have an impossibly busy time. They would have to attend consciously both to the problem of deciding what to do in any given performance and to the problem of securing consent to do it. Our hypothetical reading teacher might, for example, wonder how she could be competent if some of her students read poorly or not at all. What level or sort of competence is that? She might therefore also begin to wonder whether there were other procedures to teach reading, and what their relative effectiveness was. The first question is problematic, for it provokes doubt not only about the practitioner's competence but about the character of competence itself. The second is problematic because, while it leads practitioners in a generally commendable direction -- i.e., to identify alternative ways to practice, and to compare their relative effectiveness or efficiency -- often there is no solid answer to such questions, only a steady progression of further unanswerable questions.

Thus, one part of the genius of such tacit procedures as SOP's is that they permit both practitioners and their materials to solve the problem of consent in such quick, subtle and often inattentive ways as a hesitation, a gesture, or a glance, and to solve the problem of what is competent with little or no thought. Precisely because tacit procedures obscure the distinction I made earlier, between performances that are competent in that they produce, let us say, reading, and those that seem competent although they fail to produce reading, these procedures

allow teachers and other practitioners to often do the second while seeming to do only the first. Not making this distinction is useful precisely because it saves practitioners from explicit confrontation with many of the uncertainties of their practice, and thus keeps knowledge of many troublesome problems out of their always busy and often overloaded consciousnesses.

III. CONCLUSION

This chapter has pursued two lines of argument that seem particularly troublesome, because both suggest puzzles about the nature of competence in indeterminate practices. For one thing, I argued that competent performances in these practices often depend on procedures that seem the very antithesis of what we ordinarily mean by competence. Standard operating procedures contribute to competent performances in part by permitting practitioners to attack problems with a minimum of thought. This is necessary partly because there is often little time for thought, but even more because many performances in indeterminate practices are addressed to problems that are so complex and poorly understood that extended thought might be little help in figuring out how to practice. If this is correct, it means that performing depends partly upon procedures that avoid attention to such seemingly essential matters as what performance strategies might work best, or what the aims of a performance might be. This seems odd, for we commonly identify competence with the specialized, technical skills and knowledge of practitioners helpful in producing answers to just such questions. We ordinarily think that the competent practitioner is one who knows the best way to carry off a particular performance, and produce a particular output -- although he may have learned to do this so well as to be able to do it with little conscious attention. But the argument above seems to imply that in indeterminate practices, competence also includes using procedures specifically designed to obviate the need for such

knowledge. In certain respects, competence in these practices seems to include being able to produce performances when one doesn't know the best way to perform, nor perhaps even much about the aims of performance, or the problem to be solved. Tacit procedures are an essential component of such performances.

One wonders what sort of competence that is, or how these observations might change our conception of competence. If competent performances often depend on such tacit procedures, do the procedures entail any sort of skill? Can one speak of the skillful use of an SOP in teaching reading, for example -- especially when reading often is not learned, or is not learned well?

The second troublesome line of argument arose from my effort to show in another way that we cannot restrict our concept of competence to practitioners' specialized skills and knowledge. For if one reason practitioners succeed in performances is their specialized skills, another is that the materials of practice commit themselves to the performance, consenting to the practitioner's methods and goals, and helping thereby to produce the desired outputs. One possibility this opens up, therefore, is that competence in these practices extends to the ability to mobilize this commitment in the materials of practice. But if that is the case, what is excluded from competence? Is a teacher who produces both discipline and reading by using autocratic discipline competent? Can we designate as competent an untrained person who sets up shop as a psychotherapist, and produces patients who claim they are both cured and satisfied?

Both of these lines of argument thus suggest that our conception of competence may require some alteration. Practitioners' specialized skills and knowledge may not be the chief constituent element of competence, or perhaps specialized skill and knowledge have a substantially different meaning in

indeterminate than in other practices. I wish, however, to turn to the alternative view -- that by means of much more patient, explicit analysis of performances, the large unknowing elements that competence seems to contain can be reduced or eliminated. The next chapter turns to that task.

IV. THE SOCIAL NATURE OF COMPETENCE

Competence in indeterminate practices is distinctive, and this has something to do with the social character of these practices. What is this uniquely social character? What implications does it have for practitioners' work, and their competence?

IV.A. UNIQUELY SOCIAL ELEMENTS OF PRACTICE

All practices are social, because man is a social being. But indeterminate practices are social in several additional, unique respects. First, every performance is itself a social organization, requiring at least two persons: the practitioner and the human being on and with whom he practices. In these practices, performance is a human group, one of whose constitutive elements is interactions aimed at producing some output. Practitioners cannot work without this organization. The psychiatrist cannot practice without his patient, any more than the lawyer can seek justice without clients. They can prepare alone, but they cannot practice alone.

Practitioners in indeterminate practices are in this respect different from their colleagues in all other practices. It is of course true that the work of every practitioner in every practice is social in certain respects. Every practitioner, even those working alone, is linked to others and to institutions through language, the skills he has learned, and the social division of labor. In addition, people often practice in groups. But only in indeterminate practices are practitioners linked in a social organization with the materials of their practice. For convenience I will term this the performance organization, to distinguish it from other organizations which enter into or otherwise bear on practices. These performance organizations are sometimes fleeting and sometimes stable, but whatever

their attributes, they are the medium for practitioners' work. Performance in these practices is nearly always social performance. All practices depend on social organization, but only in indeterminate practices is such organization the very stuff of practitioners' work.

A second distinctively social aspect of indeterminate practice is that their outputs always include some state of the performance organization. The teacher may wish to improve the appreciation of literature, but he also must have order in his classroom. Similarly, the psychiatrist must have patients who talk, and judges require a courtroom in which decorum is observed and procedures are followed. Whatever else the practitioner does, such organizational states must exist. These states are important to the outputs of practice in three analytically distinct respects. For one thing, they are sometimes valued as outputs in their own right. Some teachers and parents, for example, believe that orderly and tidy classrooms are important in themselves, quite apart from any connection to learning academic subjects, because of the values these organizational states manifest. Others prefer what are called open classrooms, for the same reason. Second, these states of the performance organization seem in certain respects to be a precondition of other outputs. The psychiatrist requires patients who talk, because without a certain minimum of such interchange his other outputs -- greater happiness for the patients, or improved emotional health -- cannot be achieved. A classroom needs some sort of organization in order for academic learning to occur. But finally, such a stepwise formulation misses some complex interrelations between organizational states and other outputs. For one thing, the nature of the other outputs being produced, or the quality of their production, can affect organizational states. A classroom of students that are reading well, for example, will be likely to produce different

organizational states than another classroom that is struggling with the subject; when a therapy group deals with such issues as sexuality, this will produce organizational states somewhat different from those produced in dealing with the members' past relations with their siblings. In fact, practitioners must often deal with organizational and other outputs all together. Teachers, for example, ordinarily do not have one set of procedures for managing the cognitive complexity of reading, and then use another set for dealing with organizational matters. In practice the two problems often seem indistinguishable: they must teach reading and at the same tine maintain order, and they therefore practice in ways that will enable them to do both. For example, they may try in reading to "keep the material interesting," so that discipline will not become a problem, something they might not do if discipline were never a problem. Other teachers employ a very orderly and authoritarian approach to all instruction as a way of dealing with organizational issues, and as a result they respond to reading problems in some students with punitive techniques they might not employ were discipline not a concern. This, in turn, may affect the classes' academic outputs. Thus, while we think of organizational states as distinct from such other outputs as reading, in practice the two sorts of output are very closely intertwined, often so much so as to be indistinguishable.

A third distinctively social feature of indeterminate practices is that every performance is a joint product, the creation of social interaction. Whatever outputs we consider, they are produced by the combined efforts of the practitioner and his materials. This is particularly important to note because of our tendency to picture the outputs of these practices as chiefly the result of practitioners' active work on their passive materials. This picture is common in both social science analyses of practice and in the organization of practice itself. Many sociologists of education, for example, write about their subject as though teachers and school administrators were the passive agents of society's will, merely transmitting social norms or other beliefs to equally passive students. And many teachers and administrators organize their work on the evident assumption that their role is to give knowledge actively, and the students' role is to passively receive that gift.

But thought and action of this sort ignores the very great contribution which the materials of practice make, even when they find themselves in a passive posture. For in such situations the very passivity of the materials contributes to the interaction in ways which have great effects on the result. It would, for example, be unusual for a psychiatrist working with a mostly silent and submissive patient to have much success; and teachers whose

interactions with students are characterized by silence and withdrawal on the students' part are similarly unlikely to produce impressive academic results. In both cases, even though at first glance it seems that the practitioner is the chief agent in the situation, it would probably be more accurate to say that the single most important factor shaping the interaction was the dispositions of the materials.

Just as important, a result of the sort just discussed is ordinarily not produced by a one-shot decision at the outset, in which the practitioner tries to accomplish something and his student, or patient, retires instead to the solitude of his own mind. The teacher confronted with a class in which half the students are withdrawn must instead engage in some ongoing interactive process with the withdrawn students. He may, for example, persist in efforts to draw them out. trying to tempt them with questions, assignments, or rewards for greater participation. And they, in turn, may reject these offerings. But the work of offering and rejecting requires interactive work on both of their parts, and subtle work at that. The teacher cannot do too much, lest he ignore or demoralize the attentive half of the class, or provoke the passive students by pressing too hard. For in this latter case their passive withdrawal might become active, hostile, and disruptive. For their part, the passive students engaged in this ongoing interaction cannot be too provocative in their rejection, for that might make their continued presence in the classroom uncertain, something which they might not desire for other reasons. In many classrooms, interaction of this sort goes on regularly, the complex and subtle interactions around seeming passivity forming one of the main themes in the activity of the entire group. Needless to say, such interactions are powerfully important in producing organizational and often other outputs.

Thus, it is easy to leap from the fact that practitioners have

greater authority to the often incorrect inference that they are therefore much more powerful in producing performances. Because of the interactive character of performances in these practices, power is not necessarily co-extensive with authority. Indeed, in those practices in which the performance organization is a good-sized group, such as teaching, the interactions are so complex as to place considerable limits on practitioners' relative importance in producing performances. In any classroom in which academic learning occurs, for example, the students and teacher must produce a kind of willing presence, a collective commitment to attend to those complex operations we call reading, or physics, or the appreciation of music. To do this the students must attend to the teacher, but perhaps even more important, they must attend to each other in very particular ways. If it is an oral lesson, for example, they must listen to what others say; more, they must try to understand it; each must therefore take a role in advancing not only his own understanding and skills, but also those of others. And the students must not only do all this, but they must also not do all sorts of other things. Sometimes these actions occur knowingly, but often they do not. Producing a good class is thus a complex collective enterprise, the result of social interactions occurring in many different dimensions and at many different levels, all at roughly the same time. It is thus much more accurate to see the outputs of indeterminate practices as joint products than it is to think of them as principally the practitioner's work.

This interactive view of performances seems to hold, despite the fact that each member of every organization brings much that is unique to each performance, and that these varied ideas, abilities, personal histories and momentary dispositions make important and distinctive contributions to every performance, contributions which vary as the

participants or the times vary, or both. For these unique contributions occur only through social interaction. Consider, for example, how an unusually aggressive child contributes to a reading class. This occurs in part through the many ways his actions affect others directly, or are interpreted by them, or each interacts with the aggressive child. His effect also occurs in part through the ways each of these other students directly affects and is interpreted by the aggressive one. Finally, his effect occurs in part because of certain interactions which may arise among the other students from the aggressive one's behavior. In these several ways, this one student's words and actions may have considerable and complex effects, but only through interactions. Some of this is intentional and conscious, and much of it is not. But whether conscious or not, interaction is the vehicle for the unique contributions of members of performances in indeterminate practices.

Viewing the production of performances in indeterminate practices as the result of interactions between practitioners and their materials throws some light on the question raised in Chapter II: how can practitioners perform justifiably? In many practices, the terms of reference for the justification of performances lie outside the performances; the materials of practice are inanimate, and the justification of practitioners' work is a matter among practitioners, those who use their products, and those who comment on and criticize the products. But the social nature of practice means that the primary audience for justifying performances must be the materials of practice. The materials of practice and practitioners engage each other on two analytically distinct but closely related levels: on one they are collaborators in the production of various outputs, but on another they are judges of each other's performance. In order to work effectively as collaborators, they must have a positive evaluation of the quality of each other's performance, or at

least not a negative one. Teachers, for example, must satisfy their students, in some important respects, if their students are to continue actively engaged in the class, and the reverse is frequently true as well. Therapists and their patients must meet the same conditions, as must politicians with their constituents. For performances to be successfully produced they must continually, though not necessarily explicitly or consciously, be mutually justifiable between practitioners and the materials of practice. Because of the social character of these practices, the production and justification of performances cannot be nicely separated, as they can in all other practices.

This, in turn, has implications for the tension, mentioned at the close of the last chapter, between perspectives on competence internal to performances and those arising outside performances. The fact that performances can only be produced and justified jointly makes practitioners quite keenly aware of the primacy of their performance organizations. They must try to adjust their work to meet varied external standards, but they know that they cannot even practice if they lack performances that are mutually justifiable, to themselves and their materials. As a result, the tension is of more than analytical interest -- it is a problem with which practitioners must struggle on a daily basis. From the inside, practitioners are pushed to perform in whatever ways seem most likely to engage the collaboration of their materials for the tasks at hand. To put it cautiously, competence must be adapted to the unique characteristics of the performance organization. But as the great variety of methods and styles in such practices as teaching, politics, and psychiatry suggest, this adaptation is often considerable, and it is often a direct result of practitioners' need to adapt their work to suit certain attributes or preferences of their materials. In many cases, therefore, competence seems to verge on being whatever practitioners and

their materials jointly decide. From the outside, by contrast, competence is seen in the terms of larger, less situational, and more abstract patterns of social thought and organization. These include prevailing conceptions about the appropriate outputs of practice, professional standards for methods of work, and accepted ideas about the knowledge supposed to be relevant to practice.

Of course these are not two entirely different worlds. Practitioners do acquire professional values that they find useful in their everyday work, and they do sometimes even report that scientific theory is similarly helpful. In addition, since individual performances occur in social contexts, much of what practitioners and their materials find desirable or acceptable in their particular interactions are the very things their society finds desirable and acceptable. But along with such overlaps, there also are deep differences between the two perspectives outlined above. Consider a few relatively small examples: from their vantage point inside performances, practitioners often remark that scientific theory is of little help in figuring out how to get a patient to deal with what seem to be his problems, or in knowing how to instruct a class in reading; they sometimes note that learning the analytic skills of the external judge disrupts their ability to effectively produce performances, by interfering with the ways they have learned to work; and they observe that many professional standards, often those taught during training, would be very poorly adapted to the exigencies of actual practice. Sometimes these conflicts can be ignored, but if we consider some larger examples, it is easy to see why the tension is quite often a source of considerable anguish for practitioners. Teachers experience this conflict when they find that, owing to various interactive

demands of classrooms, less academic work is possible than external standards, often incorporated in their own beliefs, tell them is desirable. Therapists experience it when they see the frequently great gap between the actual progress their patients make toward self-awareness and emotional health, and the much greater self-awareness which psychotherapeutic theory suggests is required for emotional health. In such situations, practitioners painfully question their competence. Torn between demands internal and external to their performances, they are persistently unsure about the competence of their own performances.

One reason for this unsureness is the increasing tendency, in commentary on practice and training for it, to portray competence as a species of technical expertise. Such expertise is thought to be independent of particular situations, capable of being taught and judged in terms external to performances. In such commentary and training practitioners find little that corresponds to the requirements of competent performance that they experience daily, from the inside of performances. The demands of producing performances create powerful pressures on practitioners to give this internal competence the highest priority in their work, yet it is not a perspective on competence much recognized in commentary on or training for indeterminate practice. Some exploration of the uniquely social features of competence may be useful in this connection.

IV.B. UNIQUELY SOCIAL FEATURES OF COMPETENCE

The irreducibly social features of indeterminate practice have large implications for the character of practitioners' competence. For one thing, whatever competence means, it must be social: the medium of practice is a

social organization, and certain persistent outputs are states of those organizations. The practitioner is thus in certain fundamental respects a practitioner of social interaction. To be competent, whatever that means, includes competence at interaction.

A second point, which follows from the first, is that we therefore cannot think of performance in indeterminate practices as simply technical. Performing well always has social dimensions; although this varies in degree among practices. We may think of teaching reading, for example, as requiring a set of technical skills related to certain formal cognitive operations. The reading teacher's understanding of reading, his ability to select appropriate examples, and his grasp of the significance of mistakes, all might be seen as technical skills helpful in teaching reading. But while this is correct in a certain limited sense, these skills must be social in several additional respects. For the skills can be used only in social interactions, and are affected by those interactions. Certain reading examples make sense with one student but not another. Similarly, psychiatrists may require certain technical skills and knowledge, related, say, to knowing the nature of neuroses. But this knowledge can be used only in particular settings of their practice, and thus will depend on such things as the skill to frame questions that both make sense in the particular setting, and that will provoke answers useful in the therapeutic process. The seemingly technical knowledge must therefore be adapted to the character of social interactions, and typically adapted to the particular character of each setting. For the character of settings varies according to the unique interactive patterns between each practitioner and each patient.

Even seemingly technical skills are therefore inextricably social and situational in indeterminate practices. The skills can be employed only in social settings, and since there is considerable variability in such settings, the skills and knowledge must be integrated with the social interactions to be effective. As a result, the skills and knowledge of practice are not independently transportable en bloc. They cannot be learned once and for all, and then be expected to work in roughly the same way in varied interactions. The skills can be used only as they can be modified and adapted to the varied character of different interactions. One feature of competence in indeterminate practices therefore consists in effecting such integration between knowledge and varied social interactions.

The social nature of competence sketched out here is manifest in three chief ways. One is the improvisational character of practice; another is the double-edged quality of practice; and a third is the situational character of competence. Each has large implications for our understanding of practitioners' work and competence.

IV.B.1. IMPROVISATION

The first point is that because their practices are interactive, practitioners must continually and quickly adapt to unpredictable changes in their performance organizations. The therapist, for example, must be able to adapt his insights, questions, and other intervention techniques to his patients' changing moods and circumstances, changes of which he often has little notice and, at the moment at least, only fragmentary knowledge. To the extent that he cannot adapt to the unforseeable in this way, just to that extent will his practice be unsuccessful. Similarly, teachers must continually adapt their performances to unpredictable interactions with and among students, as well as to externally inspired changes in their states of mind. Such adaptation is a central feature of teachers' competence.

Interactive improvisation, in which practitioners perform by capitalizing on or in some other way dealing with spontaneously occurring and unpredictable behavior of their materials, is an absolutely central feature of work in indeterminate practices. Practitioners thus must literally make up their performances as they go along.

One important consequence of this situation is a deep sense of the frailty of competence, and often a sense of fraudulence, among practitioners. One reason for this is probably inherent in the work. Practitioners know that they often succeed by the skin of their teeth; that they survive by responding to changing and often very uncertain circumstances, without benefit of reflection or even pause. They often will say that they are ill-prepared for such work, at least in any formal sense. This sense arises in part from the indeterminate and contested outcomes of these practices, but it is also due to the interactive and therefore improvised character of performance. Of course, indeterminacy and interaction work together, to enhance practitioners' sense that they are skating on thin ice. This sense of frailty and fraudulence is particularly marked because one feature of interactive improvisation is that the participants know it. Students frequently test their teachers, for example, devising large and small problems of behavior or thought on the spur of the moment to see how the teacher will manage, or for some other reason. The students know at some level that the teacher cannot have a well-rehearsed response to such spontaneous interventions, and that how well the teacher manages will depend in large part on the teacher's ability to devise a convincing response, on the spot. Teachers, like politicians, administrators, psychiatrists, and others know that such interactive improvisation is one large key to their successful performance, but because they know that their materials are also aware of this, it makes the ice seem even thinner.

Thus, one reason competence seems frail and even fraudulent is that successful performance is in large measure a species of interactive improvisation, a form which seems subject to easy collapse. Anyone who has seen improvisational theater is aware of the great and complex challenges actors and actresses face when they must quickly make up skits on the basis of random suggestions from their audiences. But how much greater would the challenge be if they had to improvise these skits in ongoing collaboration with their audiences, using members of the audience not only as initiators but also as regular collaborators -- collaborators as important as the performers -- in the performance? The question suggests something of the character of work in indeterminate practices. Of course certain aspects of this problem can be dealt with by imposing routines of one sort or another, as practitioners frequently do. But especially in liberal societies such as our own, the materials of practice regularly remind us that even such routines have frail foundations.

A second reason improvisational performance seems frail and fraudulent, however, is that improvisation is given virtually no recognition, in analysis of and training for practice, as an important and legitimate feature of competence. This is a point which, surprisingly enough, applies to quite a variety of practices. For example, in a much simpler form, improvisational adaptation of work to the unique features of one's materials is a major feature of work in crafts. But as a few commentators have pointed out, even in commentary on these practices it is assumed that performance is a rational, planned phenomenon, in which practitioners first decide what they want to do and then execute their performance in pursuit of the end they wish to achieve. While this often occurs, it is also frequently the case in crafts that the ends are given by the means -- that the appearance of particular materials will suggest an end that, to that point, no one had in mind.

Such performances can only be understood as an improvisational evolution from means to ends. Perhaps even more often, performance in crafts is a sort of oscillating evolution, in which practitioners begin with a weakly formed notion about a product, suggested perhaps by materials found, or by some other source. They then proceed to refine both ends and means, by a process of exploratory shaping: they perhaps discover from some properties of the materials necessary or desirable modifications of the end product; they learn from refinements in the concept of the end product, which refinements themselves are the result of progress in the work, ways in which the materials can be modified to make them more suitable to the developing end. Despite the fact that work in crafts and other object-producing practices frequently goes on in this way, there is little in commentary or analysis which recognizes it. Instead, analysts mentally reconstruct work in these practices into a sort of deductive rational (begin-from-planned-ends-and-proceed-to-the-implied-means) format.

If improvisation is a principal but unrecognized means of work in crafts, the same point is true several times over for indeterminate practices. In these practices the evolutionary and interactive character of improvisation is of course even more pronounced, because the materials of practice participate, often as actively as the practitioner, in deciding what ends are desirable, what means appropriate, and how both shall be construed in any particular performance. Yet as David Hawkins has observed, the improvisational quality of performance in such practices as teaching simply is not recognized, either in the literature on teaching or in training for the profession. There has been almost no analysis of the character of improvisation, nor any exploration of the various improvisational strategies that can be used by practitioners. There has been no scrutiny of interactions between various organizational settings and particular improvisational

strategies, nor has there been any analysis of the consequences, for practitioners' sense of their competence (or other feelings about practice), of the improvisational quality of their work. Often their first exposure to this aspect of practice occurs not in training but on the job, since it goes unmentioned previously. Training and commentary on these practices instead tend to mimic the deductive, ends-to-means reconstruction of reality found in commentary on other practices, particularly in writing on technology and science. Teachers are exhorted, for example, to become good planners, to learn how to set specific objectives, how to determine the means to achieve them, and then how to march ahead from the first to the second by a process of planned sequences. One would think they were being taught how to park cars. Such training and analysis of practice is damaging in many ways, probably too obvious to chronicle here, but one consequence is important for this discussion. It is that such training and commentary heightens practitioners' sense of the illegitimacy of their often largely improvised work, for it tells them, directly and indirectly, that to practice in an improvised fashion is less than competent. The absence of any external legitimation of this feature of their work often leads practitioners to question their competence, and to worry or to conclude that they are perhaps a species of ill-prepared circus performer, one who could find the high road if he only knew better, instead of lurching along on a swaying tightrope.

Many practitioners know that their problem in this connection is at least as much the result of poorly conceived commentary, analysis, and training, but this is a difficult position to maintain when the trainers and analysts work in universities and government agencies, centers of social prestige and high visibility, while practitioners work in schools, or state and local agencies, or in their own private practice, all of which are, in varying degrees, of lesser status and

visibility. Thus the sense of the frailty and even fraudulence of practitioners' competence which is inherent in these practices is magnified by the lack of much recognition of the improvisational quality of work in training for and commentary on practice. The enthusiasm instead for a rational ends-to-means picture of how practice should occur is probably no accident. In a society which identifies authoritative knowledge with a comically organized hypothetico-deductive reconstruction of discovery in the physical sciences, it is only to be expected that in practices whose knowledge and skill seem weakest by comparison with this caricature, there would be the greatest efforts to pretend that the skills and knowledge of practice either were or could be organized in a similar way. The result of such efforts is that much writing on and training for work in indeterminate practices is based not on a close analysis or practice but instead on this peculiar caricature of knowledge in science and other practices. In such practices as education, analysis and training based on this picture wins it no acceptance outside the field, for the results of efforts to create a science of education, or to do "scientific" research on the subject, lack the substantial predictive or even explanatory power. And because the analysis and training correspond so weakly to what practitioners in education actually do, the caricature produces a great gulf between practitioners on one hand, and the schools of education which train practitioners and do research on them, on the other. The institutions of training and research are thus cut off both from the field of practice they should be understanding and improving, and from the scientific status to which they aspire.

IV.B.2. COMPETENCE IS DOUBLE-EDGED

A second implication of the social character of competence is that performing competently requires doing two things at once, always dealing with both the technical and interactive sides of practice. To understand competence in these practices one must understand that it is double-edged. While for analytic purposes we distinguish technical performance from performance in social interaction, in reality practioners must do double duty, integrating what we think of as the technical and interactive aspects of practice. For some purposes, of course, it is helpful to distinguish social interaction from certain specialized knowledge, such as the understanding of neurosis, or the concept of number. And the distinction is also useful in training practitioners, for one does not need to learn everything in one great gulp. Those who wish to teach mathematics, for instance, may find it useful to put aside learning about the social sides of their proposed practice for large periods of time, in order to learn mathematics instead. But the distinction between technical and interactive aspects of these practices is in one respect a hindrance: if we wish to understand the competence of teachers of mathematics -- as opposed to their competence as students of mathematics, or mathematicians -- it will require understanding the integration of social interaction with mathematical knowledge.

There are several different ways of viewing this integration. One of them, which for purposes of identification I will term companionship, is that dealing with the social side of practice is a necessary preliminary to the exercise of practitioners' skills. Teachers must have their classes settled down before reading or math can be taught and learned; legislators must adhere to certain procedural arrangements in order to conduct inquiries, bargain, and shape statutes.

as knowing the subject matter. In some respects, then, competence in such practices entails "knowledge" of other humans' thoughts or feelings, or of the way they attack problems. Such interactive knowledge is as important to practice as the knowledge of psychoanalytic theory, political structure, or cognitive reading operations.

One wonders, however, exactly what the nature of interactive knowledge is, and how it is integrated with more technical skill and knowledge. Practitioners' language offers one answer, at least: perceptions about the materials of their practice guide certain other features of their work. A teacher notices that one student does not read well under the pressure of group performance, for example, and so tailors separate reading lessons for him. Sometimes such knowledge is explicit -- indeed, often practitioners gain this knowledge because their materials tell them, straight out, leaving nothing to the imagination -- but frequently the knowledge is only partly articulate in the practitioner's mind. A therapist, for example, may find his gentle probing questions insufficient to produce material for productive therapy in a given case. His guess, or intuition, is that the patient is accustomed to being dominated, and he adapts his technique to the pathology, hoping thereby to ultimately overcome it. Practitioners make ready reference to such intuitions in efforts to explain why they work as they do in particular circumstances. While guess and intuition are elusive categories, they make a claim to perceptions of fact. In such cases, as in the others noted here, practitioners claim to notice something about their particular materials which requires adaptations in their practice.

Practitioners also testify about a different sort of interactive knowledge, also quite important to practice -- to wit, explicit beliefs. Teachers typically have strong ideas about the degree of informality desired in their classrooms;

In this respect, mobilizing commitment is seen as a required foundation for other, more knowledgeable operations, even though it is a foundation that must be often mended, shored up, or rebuilt on a continuing basis. This angle on competence is of no small importance, for among other things it calls our attention to the many ways in which technical skill alone is insufficient to produce and justify performances. Once alerted to this point, we can notice many confirmations, typically hidden to observers and unknown to participants -- such as the exchange between the therapist and her patient described earlier in which she asks the patient's consent to a proposed course of treatment by raising her eyebrows, and the patient responds with a slight nod. If the patient assents, he has advanced the performance; if he does not, a potentially large problem might be presented. There are many small but critical interactions of this sort, all essential in producing and justifying performances. In countless ways, such quick, subtle, and often unknowing interactions remind us that commitment is an absolutely necessary companion to skill.

There is a second view of the social character of competence, in which skill and interaction are less easily distinguished. For convenience I will term this close integration. A bit earlier I noted that the teacher's or psychotherapist's competence depends in part on the continuing integration of special knowledge with social interaction. Fitting the questions, examples, and answers to particular interactions is as important

about the strictness with which their authority should be exercised; and about the extent to which students' initiatives should determine what is done, or how. Similarly, administrators, therapists, and other practitioners shape interactions with their materials on the basis of articulate beliefs about interaction. These ideas often have a powerful influence on practice, shaping its organization and the manner in which it are conducted. Beliefs are of course often reinforced by experience, but ordinarily beliefs are not based on claims about having discovered facts about one's particular materials. They are instead presented either as claims about "facts" for all materials (children need discipline), or as facts about the practitioner, and how he or she prefers to organize social interaction.

In at least these two ways, then, interactive knowledge is woven together in performances with other skill and knowledge. These performances do not depend only, or even largely, on such interactive knowledge, for practitioners' work also is shaped strongly by inarticulate preferences -- called habits, or unconscious desires, depending on the beliefs of commentators. But whatever the names given to them, these preferences also are integrated with technical skill and knowledge -- as in the case of the teacher whose lessons are shaped by his inarticulate preference for one-to-one interactions, rather than group discussion. Nonetheless, even when conscious understanding makes only a small contribution to performances, interactive knowledge -- i.e., conscious beliefs and perceptions about social interaction and one's materials -- are essential forms of knowledge required for practice. What we commonly think of as technical knowledge must be integrated with interactive knowledge, to be usable in practice. Because

indeterminate practices are social, practitioners cannot work without the integration of these two sorts of knowledge.

These comments are only a small beginning. There may, for example, be other sorts of interactive knowledge, or a better way to distinguish among the sorts mentioned here. One might make a case, for example, for the notion that deliberate knowledge of the self is distinct from the other two sorts of interactive knowledge discussed above, and particularly important in indeterminate practices. Certainly psychotherapy is premised on that idea. In addition, this little sketch reveals the need for descriptive work on performances, to improve our grasp of the ways in which beliefs, perception, and technical knowledge are organized together in practice. For if I am correct in thinking that this integration underlies much of what practitioners do, we are embarrassingly ignorant of the ways in which it occurs. Some of the examples above, for instance, suggest that belief, perceptions, and inarticulate preferences may be the dominant elements in practice, subordinating what we think of as technical skill and knowledge. Many teachers, for instance, believe that students' intellectual and moral development requires that they master subject matter, and therefore remember large quantities of material. Other teachers believe that students are better served by acquiring problem-solving skills, rather than by mastering large bodies of material. These beliefs, in which pedagogy and morality are already mixed in liberal doses, have large implications for what is taught, and how, and perhaps what is learned as well. Teachers in the first group will develop certain skills and knowledge that might be thought of as technical, because they are are related to the subject matter; they will remember large bodies of material, for example,

and at least some of their students will develop this skill as well. By contrast, teachers in the second group, and their students, will learn much less subject matter, but may develop skills of reasoning and argument that would remain relatively undeveloped in the first group.

If these examples are roughly correct, then in certain respects the technical aspects of learning are subordinate to, or dependent upon, interactive knowledge. And this, in turn, implies that practitioners may only be able to acquire those technical skills and knowledge which fit with their beliefs and inarticulate preferences. There certainly is evidence which supports this inference. Some teachers, for example, say that they cannot learn open classroom techniques, requiring instead more ordered settings. Some therapists say that they cannot work with traditional talking therapies, requiring instead to touch their patients, or to express their own feelings more fully. In such cases and many others, there are indications that technical skill -- i.e., the acquired knowledge of how to organize lessons in an open classroom, or how to use conversation, memory, and verbal expressions of feeling to solve emotional problems -- is dependent upon interactive knowledge. For the skills are learned only when they can be integrated with existing beliefs and other inarticulate preferences. We do not know the extent to which this is a fair picture, something which investigation might illuminate a bit. But to the extent that it is correct, then just to that extent is much training for these practices misdirected. For one thing, much training is premised on the notion that skill and knowledge is technical, and independent of interactive understanding. And for another, most training comes before practice; yet typically it is only in practice that people discover, or in other ways come to terms with, the beliefs and inarticulate preferences that influence their ability to acquire certain skills and knowledge and not others.

The social character of indeterminate practices thus means that competence depends upon the integration of interactive with other forms of knowledge and skill. My exploration of this point has been only a small foray into a large, and largely unexplored, terrain, but it may help to call attention to the fact that competence is a broader and more complicated phenomenon than is often assumed. In addition, the importance of interactive knowledge raises questions about the extent to which competence can be trained, at least in formal academic settings. This issue has not been much attended to by commentators on practice, perhaps because they are also frequently responsible for the formal training. Nonetheless, even a modest appreciation of the social character of competence, and the many subtle ways in which it depends on integration of interactive with other knowledge, leads to large questions about the utility of formal training.

IV.B.3. COMPETENCE IS SITUATIONAL

Another distinctively social feature of competence in indeterminate practices is that competence is quite strongly influenced by the particular character of individual performance situations. Competence is a product of those situations, to a degree quite unique among practices.

One reason for this is that practitioners must adjust their work to the many varied and often unpredictable features of their performances. The materials of all practices vary in certain respects from one performance to another, of course, but in indeterminate practices this variation is much greater, because the materials are human. I noted above, for example, that practitioners' work is therefore, in large measure, a species of interactive improvisation, in which with their materials they create performances out of varied and often rapidly changing elements of the social situations in which they find themselves. Competence in this sense has something to do with the ability to marry purposes somewhat external to the

performance situation -- i.e., learning to read, or being able to get a particular bill passed -- to the unique and often unpredictable features of the performance situation, and to do this in such a way as to both manage the many performance interactions without disruption and somehow advance the external purposes. As a result, particular situations can have a great impact on practitioners' work, and therefore on their competence.

A second reason competence is situational is that the materials of practice are active participants in producing performances -- their commitment, for example, is one essential ingredient for successful or competent performance. In order to produce, encourage, or otherwise engage this commitment, practitioners often must very closely adapt their purposes and methods of work to the wishes, needs, or conditions of their materials. Practitioners have a powerful incentive to adapt to the unique character of each performance situation because of the need to maintain their materials' commitment. They cannot, of course, respond to all situational variations, nor do they need to, since there are many other sources of commitment in the materials of these practices besides the practitioner. But the central role of commitment means that practitioners must, in ways and degrees unique among practices, adapt their work to the social situations in which they work.

Thus far I have noted two respects in which the interactive character of practice requires practitioners to adapt their work closely to the particular features of performance situations. Because these situations contain persons of a certain sort, or because the persons interact in a particular way, practitioners must adapt their work if they are to perform well. There is an additional feature of these interactions, however, which makes the demands of particular performance situations even more pressing. For the materials of practice are not just actors

in performances, but also are consumers and critics of the same performances. And their work as actors is influenced by their judgments as consumers and critics. Students, I noted earlier, evaluate their teachers' work, and these judgments typically are the basis for actions of one sort or another by the students, to which the teacher must respond if she is going to perform competently. The materials of practice are thus not just beings whose varied character and commitment are agencies of the practitioner's aims; these materials also are active judges of the performances in which they participate, and their participation is shaped by their judgments. These judgments become a part of performances, thereby influencing the requirements for competent performance in that situation.

This is particularly noteworthy, because it implies that in certain respects competence in indeterminate practices is what the materials of practice judge it to be. The manager of a firm, for example, may have been trained to believe that the competent industrial executive exercises firm discipline over workers, severely penalizing them for absences and enforcing other work rules with rigor. But if he finds, over time, that his administrative performance in this mold reduces efficiency by creating resentment among the workers, promoting high turnover, and reducing quality, the manager may change his approach, permitting unpenalized absences and a more relaxed enforcement of work rules. Whether or not any workers told this manager that in their view competent management required a different approach, the workers made such judgments about his performance. These judgments entered into their actions, and the actions were such as to encourage the manager to take cognizance of the judgments. The result was that he altered somewhat, at least in practice, his notions of competent managerial performance. In this way, the manager's competence could be said to have become in part what the materials of his managerial practice believed it should be.

Such judgments by the materials of practice are not the only influence on practitioners' competence, but they are one important influence. This influence is particularly worth noting because it can vary considerably among performances, and even from one practice to another. One important reason for this variation is that the materials of practice are uniquely situated to judge the character and quality of certain sorts of outputs, and to judge as well what affects those outputs. All outputs of indeterminate practices are states of persons or organizations: order in a crowd; profitability in a firm; self-esteem in a patient; or reading prowess in a child. But while some of these outputs are actions or indices of behavior which have a more or less readily accessible common meaning, other outputs are inner states of mind or feeling, whose character and meaning is much more accessible to those who experience the states than to others who ovserve. A patient in therapy, for example, is much better situated to report on his self-esteem, and on what affects it, than a manager is to report on profits and what affects them. As a result, in performances or practices whose outputs are chiefly states of mind or feeling, there is a greater chance that judgments made by the materials of practice will have a large influence on performances, and will play a large part in determinations about competence. For in such performances, practitioners must rely heavily on their materials, both for evidence about whether the outputs are present, and for evidence about the effects of various actions the practitioner might take to affect those outputs.

Once alerted to this point, it is easy to note the many outputs of indeterminate practices which are such states of mind and feeling, and to note as well the distinctively large role which the materials of practice often play in determinations about competence with respect to such outputs. In teaching practice, for example, one thinks of students' curiosity, their desire to learn, their appreciation

of particular subject matter, such as literature, or perhaps even their estimates of themselves. Many outputs of politics are of the same sort: citizens' satisfaction with government; or their beliefs concerning fairness in the distribution of public goods; or their views about the worth of public services. And of course most outputs of psychiatry, at least in the treatment of non-psychotics, are states of mind and feeling: the sense of self-worth. happiness; a sense of confidence; belief in one's ability to cope with emotional problems. Of course such states can be communicated to others, and regularly are. For one thing, they often are manifested in behavior: frequently the curious student will ask lots of questions, for example, and the satisfied citizen may turn up at public meetings and announce his delight with government. For another, people communicate their states of mind and feeling in many other ways: with words, the looks on their faces and the look of their walk, to mention a few. But for all of this communication, these outputs are primarily inner conditions of persons. Even the person experiencing them does so in an often inarticulate or confused way. Difficult as they are to know ourselves, let alone make sense of, frequently they are even more difficult to communicate reliably to others.

For such outputs, then, practitioners must perforce rely quite heavily on the judgments of those experiencing them, if they wish to make determinations about the extent to which a given state is present, or about the ways in which their practice may have affected that state. This even further complicates and broadens the concept of competence, because it implies that for the outputs under discussion here competence is particularly strongly shaped by the beliefs of practitioners and their materials in specific situations.

Consider, for example, the new approaches to emotional healing mentioned earlier: Primal Scream Theory, Erhardt Seminars Training, and the like. Though frequently

held to be incompetent by more traditional therapists, their patients testify that their emotional states have been improved, their relationships revitalized, and their lives and work changed for the better. They pay tribute to the competence of their therapists, whose skills, they often claim, considerably exceed those of more traditional therapists who have treated them.

Could one plausibly contradict such assertions?

In answer, some would say that in cases of this sort competence is confused with commitment. Performances seem successful and satisfying to those engaged in them because they are committed, but the performances are incompetent -- that is, lacking in the skills and knowledge of emotional healing. Only with such skills, ordinarily possessed by psychoanalytically oriented psychotherapists, can emotional healing occur. Lacking such skills in practitioners, patients might have enthusiastic reactions and perhaps even short-term improvements, but could make no real progress. One difficulty with this view, however, is that the claims made for traditional psychotherapy are not fundamentally different, or even more plausible, than those made for newer and more exotic therapies. For in all cases of this sort, evidence for the validity of claims arises either from the direct testimony of the materials of practice, or from testimony of the practitioner based on his observation of his materials, and of their testimony about their inner states. At least within the normal range of what is termed neurotic behavior, we must rely on what practitioners and their materials believe, when we look for evidence about the competence of performances. Therapists of various persuasions regularly dispute each other's assertions on this point, but absent gross behavioral evidence, outsiders would have only a very modest basis for challenging any particular set of assertions.

In psychiatry, then, because the most important outputs are inner states of mind and feeling, the materials of practice are uniquely situated to judge the presence of the outputs and the effects of various therapeutic interventions on them. As a result, the definition of competent performance is extraordinarily vulnerable to situational influences. This is one of the reasons why there is such a rich variety of therapeutic traditions, and so many implied concepts of competence. It also is helpful in explaining why, in several of these traditions, competent performance is quite plainly announced to be whatever practitioners and their materials find useful. And while this tendency is perhaps most pronounced in therapeutic practice, it occurs, to one degree or another, wherever the outputs of performances are primarily inner states of the materials. Conceptions of competence in teaching students what is sometimes termed "social responsibility," for example, ranges from severity verging on brutality on one hand, to permissive and self-directed methods verging on complete permissiveness on the other.

Thus, competence in indeterminate practices is uniquely responsive to the situational circumstances of performance, for a variety of reasons. One particularly noteworthy reason is the important role of the materials of these practices, as critics and consumers of the performances in which they participate. This role creates distinctively strong pressures on practitioners to adapt all of their performances, and thus their operational definitions of competence, to the social interactions which are the stuff of their practice. But these pressures are especially strong in those cases in which the chief outputs of performance are states of mind and feeling in the materials of practice. In such cases competence often seems to verge on being a social construction unique to the performance situation, rather than the exercise of specialized skills and knowledge generally shared within a field of practice. While many commentators treat these cases as aberrations,

or evidence of malpractice, they are only another manifestation of the uniquely social character of competence in indeterminate practices.

IV.C. CONCLUSION

This chapter has explored the distinctively social features of indeterminate practice, and called attention to several respects in which practitioners' competence must therefore be adapted to the social character of practice. A large theme in my discussion has been that it is inappropriate to think of competence in those relatively technical terms that have been borrowed from other practices, and that it should be understood more in social terms. One reason for this view is that while those working in indeterminate practices have certain skills that might be thought of as narrowly technical, in most cases such skills must be integrated with what I loosely termed the skills and knowledge of social interaction before they can be used in practice. Competence thus depends on the practitioner's integration, in quite varied ways, of two sorts of skill and knowledge typically kept seaprate in other practices. Another reason for not thinking of competence in technical terms is that performance in these practices is a unique form of interactive improvisation, and that it frequently depends on the practitioner's ability to engage in such improvisation. This is somewhat paradoxical, since the improvisatory character of performance also frequently tends to erode practitioners' sense that they have stable and reputable skills and knowledge. Still another reason for stressing the social character of competence, explored just above, is that practitioners' work must, in ways unique among practices, be adapted to the social situations of performance.

A second theme in this discussion, however, has been that when we view competence in these more complex and less technical terms, it becomes much more difficult to set clear boundaries around the concept. In my view this is not the

result of defective analysis, of poorly developed methods of practice. It is, rather, a fundamental condition in practices whose essential nature is social interaction, rather than the manipulation of objects. But if this is true, my argument has important implications for our understanding of competence, and for the ways in which practitioners acquire it. For one thing, as long as we think of competence in the traditional ways, as active practitioners working on relatively passive materials, then just so long will the many contributions which the materials make to performances be ignored, or underestimated. For another, as long as we think of competence as essentially technical, just so long shall we be frustrated and puzzled by the largely unsuccessful efforts to use various types of formal knowledge transfer -- from academic training to what is called Research and Development, or Knowledge Utilization, to develop practitioners' competence. For if competence is social in many important respects, then it is likely to be acquired in ways largely unconnected to formal training. And this opens up many questions, both about how the competence of these practices is acquired and about how training might be revised.